SAN FRANCISCO DEPARTMENT OF CITY PLANNING 100 LARKIN STREET · SAN FRANCISCO, CALIFORNIA 94102

DRAFT

ENVIRONMENTAL IMPACT REPORT

Proposed North Point Park/Marina
San Francisco, California

EE 75.368

Volume 2

Appendices

State Clearinghouse No. 76062820

Review Period

June 25 to July 29, 1976

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APPENDIX A

DESCRIPTION OF SOLID AND FLOATING BREAKWATERS

1) Solid Fixed Breakwater

The solid, fixed section of breakwater adjacent and parallel to Pier 41 would be of concrete caisson-type construction, about 40 feet wide overall. The lee, or east, side would be a solid vertical wall and the west side would be perforated (holes about 4 feet in diameter would take up about 30 percent of the surface). The entire structure would be supported on the wooden piles of Pier 41 cut off at the mud line. The perforated breakwater is designed to prevent swell from entering the proposed berthing basin and minimize wave reflections that would affect the berthing area between Piers 41 and 43 if a solid barrier were used.

The section of breakwater perpendicular to Pier 41 would be of treated timber construction. Wooden piles, structurally sound and reclaimed from San Francisco Port Commission pier demolition and maintenance work, would be used. Timber planks treated to resist attack by marine organisms would form the breakwater wall. This section of breakwater, about 450 feet long, would consist of 4" x 12" timber planks driven vertically into the bottom and laterally braced by timber planks and driven timber piles. Above about elevation +5 mean lower low water (MLLW), the planks would be bolted in place horizontally as lagging. The entire structure would be braced by timber batter piles on the leeward side. The top of the breakwater would be about +14 (MLLW), which is the approximate elevation of the existing piers. The width of the breakwater would be about 3-1/2 feet excluding the batter piles, which would be on about a 5 horizontal to 12 vertical slope.

2) Floating Breakwater

The floating breakwaters would be one of a number of types available. These would float on the surface of the water as opposed to being a solid structure extending to the bottom of the Bay. The two under study are described as follows:

(i) Wave-Maze - The floating breakwater would be constructed of truck tires bolted together to form a lattice about 1,000 feet long by 40 feet wide by 5 feet deep. Plastic flotation would be used to adjust the freeboard to 1 foot and the breakwater would be held in place with anchor chains on the windward and leeward sides. This breakwater, a patented design called the Wave-Maze, is designed to attenuate short-period waves to acceptable wave heights of one foot or less within the mooring area.

(ii) Tethered Float Breakwater - This concept, developed at the Scripps Institution of Oceanography, is a dynamic system that eliminates the need for massive bottom-resting structures. It is a series of plastic buoyant balls tethered to self-contained barges that are towed to the site and then sunk to provide the ballast to keep the tethered plastic balls in position at and near the surface.

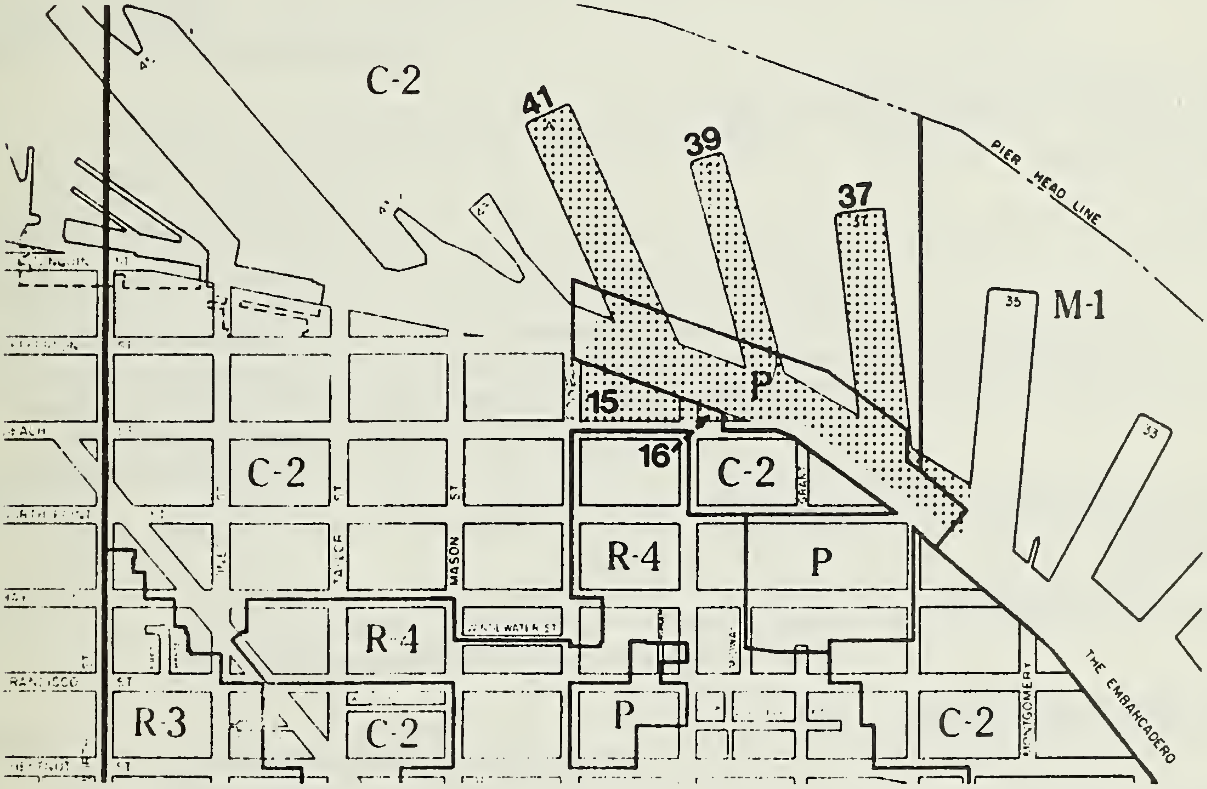
When driven by wave forces each tethered float responds like an inverted pendulum, oscillating energetically. As the wave train passes successive rows of floats, the drag produced by these oscillations removes energy from the wave, reducing their height.

APPENDIX B

DEPARTMENT OF CITY PLANNING 100 LARKIN STREET · SAN FRANCISCO, CALIFORNIA 94102

October 1, 1975

STAFF GUIDELINES FOR DEVELOPMENT: NORTH POINT PARK AND MARINA



SITE IDENTIFICATION

LOCATION:	Fisherman's Wharf area of northern waterfront, east of Powell Street and north of Beach Street, including The Embarcadero to approximate mid-point between Kearny and Montgomery Streets.
ASSESSOR'S BLOCK:	15 (Sea Wall Lot 311), 16 (Sea Wall Lot 312), 9900 (Piers 37, 39, 41)
	The Embarcadero right-of-way from Powell Street to Pier 35

SITE DESCRIPTION

SITE AREA:	Assessor's Block	=	45,847 sq. ft.	
	Assessor's Block	=	8,682 sq. ft.	
				54,529 sq. ft.
	Pier 37 (existing)	=	210,619 sq. ft.	
	Pier 39 (existing)	=	141,595 sq. ft.	
	Pier 41 (existing)	=	231,921 sq. ft.	
				584,135 sq. ft.
	The Embarcadero	=	264,043 sq. ft.	264,043 sq. ft.
	TOTAL	=		902,707 sq. ft.

CITY PLANNING CODE PROVISIONS

USE DISTRICT: P (Public Use) and C-2 (Community Business)

SPECIAL USE DISTRICT: Northern Waterfront Special Use District No. 1. Water-borne commerce and navigation uses and uses directly related to same are permitted as principal uses. All other uses require conditional use approval by the City Planning Commission. In granting such approval the Commission may impose conditions that are more restrictive than the following standards.

HEIGHT AND BULK DISTRICTS: OS (Open Space) and 40-X (40' height limit, no bulk limit)

FLOOR AREA RATIO: 4.8:1 (C-2)
None established for P District

FLOOR AREA PERMITTED: (C-2) 2,425,234 sq. ft.
None established for P District

COVERAGE PERMITTED: 100 percent (C-2)
No percentage established for P District.

Note: The established height limit will preclude the possibility of achieving the total permitted floor area; conditions established in any City Planning Commission approval for a development would likely further reduce permitted floor area and limit permitted coverage to less than allowed by the Code.

PARKING/LOADING: Off-street parking is required for retail, restaurant, office and marina uses. Off-street truck loading spaces are required for retail developments exceeding 10,000 square feet and office and other developments exceeding 100,000 square feet.

PARKING/LOADING: (Continued)

Under Sections 240.1(c), 146(f) and 135(e)6 of the City Planning Code, the Zoning Administrator and the City Planning Commission determine parking and loading requirements for developments reviewed by the Commission as conditional uses based on criteria set forth in the Code, and may permit modification of any express parking or loading requirements set forth in Sections 138 and 139 of the Code.

MASTER PLAN CONSIDERATIONS

A number of policies of the Comprehensive Plan of San Francisco apply to development in this area. They are:

Northern Waterfront Plan

Transportation Policies

Policy 7 Jefferson Street should be maintained as a two-way street for vehicular traffic; however, emphasis should be placed upon free movement and circulation of pedestrians.

Policy 8 Through traffic should be discouraged as much as possible on both Jefferson Street and Beach Street.

Policy 9 The intent of the circulation system should be to intercept as much vehicular traffic as possible before reaching the water's edge...

Policy 11 Major off-street parking facilities should be on the periphery of intensely developed areas and adjacent to major thoroughfares...

Policy 14 ...unnecessary railroad tracks should be removed... north of the Bay Bridge.

Commerce Policies

Policy 1 ...water-oriented retail, restaurant, and commercial recreation activities should be expanded in the Fisherman's Wharf area.

Recreation Policies

Policy 6 Overlooks with convenient pedestrian access should be constructed... along the entire waterfront area...

Urban Design Policies

Policy 1 ... low structures near the water...

Policy 2 View corridors should be preserved or created which can link the City and the Bay.

Policy 3 Continuous planting and other ground surface treatment should be used to physically and visually link the waterfront districts to the City.

Policy 4 In major pedestrian areas... generally continuous ground floor retail or other pedestrian-oriented uses should be developed.

Policy 6a Public access should be provided along the sides and to the end of each pier or platform.

Policy 6b The total water coverage... should be no greater than the present coverage...

Transportation Plan (Parking)

Additional parking garages, if privately built, could be located in the parking zone between Beach and North Point Streets. In keeping with the objectives of maximizing pedestrian movement north of Jefferson Street, public parking north of Jefferson Street should generally be discouraged.

Recreation and Open Space Element

The San Francisco Shoreline

Objective: ...Develop open spaces and recreation facilities which complement the urban character of the Northern Waterfront and Bay shoreline.

Policy 1 Require all new development... to conform with shoreline land use provisions, to incorporate open space, to improve access to the water, and to meet urban design policies.

Policy 3 Provide new public parks and recreation facilities along the shoreline.

Northern Shoreline Plan:

North Point Park

Provide a major new shoreline park with continuous open water vistas and maximum access to the water. Incorporate generous planting, sitting and fishing areas.

Transportation Element

General: Objective 2

Policy 2 Use transportation improvements in the city as catalysts for desirable development, and coordinate new facilities with public and private development.

Policy 4 Design and locate facilities to preserve the natural landscape and to protect views.

Mass Transit Plan: Objective 1

Policy 1 Improve speed of transit travel and service by giving priority to transit vehicles where conflicts with auto traffic occur, and by establishing a transit preferential streets system.

Policy 8 Establish frequent and convenient transit service to major recreational facilities...

Thoroughfares Plan: Objective 1

Policy 2 Design streets for a level of traffic that will not cause a detrimental impact on adjacent land uses.

Policy 4 Discourage nonrecreational and nonlocal travel in and around parks and along the shoreline recreation areas.

Objective 3

Policy 1 Widen sidewalks where intensive commercial, recreational, or institutional activity is present and where residential densities are high.

Policy 2 Retain streets not required for traffic for pedestrian circulation, open space use, and density controls.

Policy 4 Partially or wholly close certain streets not required as traffic carriers for pedestrian use or open space.

Citywide Parking Plan: Objective 2

Policy 2 Locate parking garages at the edges of shopping areas and near major entertainment, recreation, and institutional facilities.

Urban Design Element

Policies for City Pattern

Policy 1 Recognize and protect major views in the city, with particular attention to those of open space and water.

Overlooks and other viewpoints for appreciation of the city and its environs should be protected and supplemented, by limitation of buildings and other obstructions where necessary and by establishment of new viewpoints at key locations.

Policy 3 Recognize that buildings, when seen together, produce a total effect that characterizes the city and its districts.

Policies for Conservation

Policy 3 Avoid encroachments on San Francisco Bay that would be inconsistent with the Bay Plan or the needs of the city's residents.

Policy 8 Maintain a strong presumption against the giving up of street areas for private ownership or use, or for construction of public buildings.

Policy 9 Review proposals for the giving up of street areas in terms of all the public values that streets afford.

Policy 10 Permit release of street areas, where such release is warranted, only in the least extensive and least permanent manner appropriate to each case.

Policies for Major New Development

Policy 7 Recognize the special urban design problems posed in development of large properties.

Policy 8 Discourage accumulation and development of large properties, unless such development is carefully designed with respect to its impact upon the surrounding area and upon the city.

GENERAL GUIDELINES

Land Use:

1. The Northern Waterfront Plan, part of the Comprehensive Plan of San Francisco, designates the shoreline area and The Embarcadero right-of-way at this site as major public open space and the pier area as retail commercial and entertainment with major public access along the perimeter of any pier development. A park on the shoreline would be consistent with the objectives and policies of the Northern Waterfront Plan; however, a small boat marina or sport fishing marina is not specifically permitted by this Plan and a small boat marina would not be consistent with the BCDC Special Area Plan. An amendment to the Comprehensive Plan will be required for development of any marina in this area and the BCDC Special Area Plan will require amendment for development of a small boat marina.

2. Retail, commercial, and service uses located on the pier and land areas should directly serve to increase the opportunity for public access to the Bay and to enhance the recreational opportunities and amenities of the area. Uses should be developed that provide goods and services to marina users; other uses included in the development should enhance and complement existing establishments in the Fisherman's Wharf area.

3. Development of multiple use -- retail commercial, office and parking -- structure would be appropriate on the block bounded by The Embarcadero and Powell, Beach and Stockton Streets (Assessor's Block 15). This structure should not infringe upon the existing area of The Embarcadero, in order to create as much park space as possible.

4. The development of North Point Park should be such that it provides for the needs of a diversity of users. The design should include a variety of features and spaces to accommodate active and passive recreation for children as well as adults and it should serve the residents of nearby areas as well as visitors to Fisherman's Wharf. Elements to respond to these needs could include lawn areas, grouping of benches/seating (some with tables), pavillion structures, and sculpture or structures for recreation as well as visual purposes. There should be a variety of open expanses at the waters edge) to function for activities ranging from a leisurely walk to picnicking or people-watching.

5. All areas of the Park should be freely accessible to the public.

6. There should be no buildings or other structures in the Park area except those required for maintenance, or food vending or other services that increase the recreation amenity of the Park.

Circulation/Parking:

7. If The Embarcadero is closed for open space development, Beach Street should be extended to The Embarcadero near Grant Avenue.

8. Mason Street should become the major access street to Jefferson Street (Fisherman's Wharf) and Pier 45 from The Embarcadero via Beach Street.

9. Powell Street between Beach and Jefferson should function mainly for access to a Fisherman's Wharf parking facility on Jefferson Street between Mason and Powell Streets.

10. Vehicular access to the piers should be limited to that required for service, drop-off, loading, and valet needs of the marina and shops and restaurants on the piers.

11. No permanent, long-term parking should be developed on any pier.

12. All permanent parking required for development of the area should be provided in a structure located on Block 15. The capacity of this garage should be determined by the findings of the traffic study of the total Fisherman's Wharf area and in accordance with Department of City Planning evaluation of the parking needs for proposed development.

13. The right-of-way for the Belt Line Railway should be maintained. The design of the Park should relate to this right-of-way as a potential waterfront transit path.

14. Continuous pedestrian circulation and access should be maintained along the shoreline and the perimeter of the piers.

15. The design of new breakwater construction should allow pedestrian access and the use of the breakwater for public fishing purposes.

16. Bicycle paths should be included in the park area along the shoreline, and provision should be made for bicycle storage in a secure location.

View Corridors:

17. Grade-level views to the water should be created along Powell and Stockton Streets and Grant Avenue to the north, and along Jefferson and Beach Streets to the east. Within these corridors, defined by the projection of the street right-of-way over the piers and Bay, view obstructing structures should not occur.

DESIGN GUIDELINES

Buildings:

1. Generally, buildings on the piers should not exceed two stories. Development on Block 15 to the 40 foot height limit would be appropriate.

2. Building forms on the piers should maintain a scale appropriate to the maritime, pedestrian environment. Monolithic forms of structures should be avoided.

3. Materials, finishes and colors of structures on the piers should be appropriate to the maritime "over-water" setting. Generally, masonry materials should be avoided.

4. All transparent glass used at the pedestrian level should be clear (untinted), and solid blank walls along pedestrian paths should be avoided.

5. Building(s) on Block 15:

   a) Retail commercial uses should comprise the majority of the grade level frontages, except on Beach Street;

   b) Parking at grade or above grade level should not extend to the park frontages (The Embarcadero and Stockton Street), but office or other uses for human occupancy should be incorporated at this perimeter;

   c) If parking levels extend to the Powell and Beach Street frontages, the cars should be completely screened from view and the lighting concealed from view at street level;

   d) Entrances and exits for parking should occur on Beach Street;

   e) Large blank walls should be avoided;

   f) The color of the building should be light in value;

   g) Rooftop parking should be screened by trellises, planting or other appropriate means. All parking and screening should occur within the 40-foot height limit.

Access Drives:

6. Powell Street between Beach and Jefferson Streets, and the service drives to the park and piers, should be designed as continuous, level-surface pedestrian ways with driving lanes defined by such devices as bollards or paving materials, texture and color.

7. Access drives should be the minimum width required to serve functional demand and emergency service needs.

Open Space/Landscaping:

8. Special attention and emphasis should be given to design and landscaping at the pedestrian entry points to the Park at Jefferson Street, Stockton Street and Grant Avenue. The character of these entrances should be such

that they denote the "gateway" to a major public open space while providing visual transition and smooth pedestrian flow to adjacent streets. There should be no sense of constriction or of entering a private area in the design of these entries.

9. A major element of the Park design should be a continuous promenade with viewing areas along the shoreline.

10. Street trees should be planted on Beach and Powell Streets in conformity with the "Street Tree Planting Plan for the Northern Waterfront".

11. Landscaping of North Point Park should include a diversity of planting materials -- trees, shrubs, grass and ground cover. The landscaping should include usable planted areas. Hard surface paved areas should be used only to define specific functional areas or recreational elements included in the Park.

12. Generally, plantings in the Park area should be permanently placed in grade, with the use of portable container plantings minimized.

13. All exposed parking areas at grade or on rooftops should be appropriately landscaped to screen the cars from view.

14. Design of the piers should emphasize the characteristics of pier construction through extensive use of wood, especially in walking surfaces, and plantings should be generally of small scale and in containers, appropriate to their location over water.

15. Larger open space/viewing areas should be provided at the ends of piers to allow greater access to panoramic views.

16. Wind screening and seating areas should be provided at appropriate locations on the piers and in the Park area.

17. A variety of edge conditions should be provided along the perimeter of the piers to offer differing relationships to the water surface, such as steps into the water or narrow gangway paths with water on both sides.

18. Design elements evocative of maritime use and the history of San Francisco and its waterfront should be incorporated in any development of the piers and Park.

19. All lighting for public areas should be carefully engineered to provide for safety, avoid unnecessary glare and accentuate the positive features of the Park and

piers. The design of standards and luminaries should be of a high quality and in keeping with the character of the overall design..

20. Lighting for any enclosed parking areas should be totally screened from view from the exterior.

21. There should be no commercial signing in the Park area -- only directional or informational signs should occur there.

22. Commercial signing should be subdued, carefully designed, and limited to signs needed for adequate identification of each establishment or facility.

REVIEW PROCEDURES

1. An Environmental Impact Report (EIR) will be required for this development. The specific requirements should be discussed with the Office of Environmental Review of the Department of City Planning.

2. Review and approval for the project will be required by the San Francisco Port Commission and the Bay Conservation and Development Commission (BCDC). The BCDC Special Area Plan will require amendment to permit a small boat marina.

3. Amendment of the Comprehensive Plan of San Francisco (Northern Waterfront Plan) will be required before a marina can be approved for the project. Such an amendment must follow procedures set forth in the San Francisco Charter involving a public hearing and approval of the amendment by the City Planning Commission.

4. The U. S. Environmental Protection Agency may require special review of the parking structure.

5. Zoning reclassifications may be required for the project. If they are required, applications are filed with the Department of City Planning and are subject to approval, following duly advertised public hearings, by the City Planning Commission and the Board of Supervisors.

6. The Northern Waterfront Special Use District No. 1 requires conditional use approval for uses other than maritime-related uses. An application for a conditional use is filed with the Department of City Planning and is subject to approval, following a duly advertised public hearing by the City Planning Commission.

7. At the earliest opportunity in the design development stage, the Project Review Section of the Department of City Planning should be contacted to discuss the Department's design concerns regarding the building form and general design of the specific proposal.

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APPENDIX C

Note: When this study was conducted, the proposed project was planned for staged construction. Plans have been changed, and only Phase II, the completed project, is valid. In addition, a tower (shown as a circle in the figures) is no longer part of the project.

MICROCLIMATE IMPACT STUDY ON THE PROPOSED
NORTH POINT PARK/MARINA

SAN FRANCISCO, CALIFORNIA
October 31, 1975

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I. INTRODUCTION

Architects, engineers, and city planners designing urban structures are limited by the lack of information on wind effects brought on by the presence of these structures, such as discomfort for pedestrians and wind-caused mechanical problems with doors, windows, and ventilating systems. Once a structure is built, remedial measures (if they exist at all) are usually very expensive.

It is virtually impossible to anticipate, by analysis or intuition, the winds that will be caused by a structure, since they are determined by very complex interactions of forces. Fortunately it is possible to predict the wind patterns and pressures around structures by testing scale models in a wind tunnel that can simulate natural winds near the ground. This allows the designer to foresee possible environmental and mechanical problems and alleviate them before the building is erected.

Data from wind tunnel tests can be combined with climatological data to analyze the effect of a proposed structure on pedestrians in terms of human comfort. The frequency distribution of wind strengths at pedestrian level, combined with temperature data and shadow patterns of the proposed structure and its surroundings, can be used to forecast comfort at pedestrian levels.

The research was conducted in three stages. The current wind environment of the site was first measured. The impact of the wind environment due to construction of Phase I was then evaluated. In the final stage the impact caused by the construction of Phase II was assessed.

II. SUMMARY

A wind tunnel investigation was carried out on models of the project site as it exists and as it would exist with the proposed development. An analysis of comfort was prepared, taking into consideration winds and sunshine. Mitigation measures to reduce winds and improve comfort were developed.

The results of the wind tunnel test show that the existing site is relatively exposed to winds off the Bay. Windspeeds were generally moderate to moderately high. Near waterfront structures, winds were low but turbulent. Winds between the piers were found to be higher, especially near the water's edge.

Phase I construction generally decreases winds along the Embarcadero. The open areas of Pier 39 are found to be moderately windy, while structures on the pier provide shelter.

Phase II construction further decreases winds on the Embarcadero. The low-rise nature of the project buildings and their orientation with respect to prevailing winds result in low windspeeds on Pier 39, except at its outer end and between some buildings.

The analysis of comfort shows that comfort on the Embarcadero increases with implementation of the project. Some areas of Pier 39 are uncomfortable during Phase I but completion of Phase II reduces winds and increases comfort throughout Pier 39.

III. PROJECT AND SITE DESCRIPTION

The project site is located at the extreme north end of the San Francisco Peninsula near Fisherman's Wharf. The main portion of the project is on Pier 39, which extends out into the San Francisco Bay. The site is relatively exposed to wind from easterly to westerly directions and relatively sheltered from southwesterly to southeasterly winds by the urban landscape.

The project would be constructed in two phases. In Phase I the present structure on Pier 39 would be demolished and replaced with one- or two-story restaurants and shops. Between Piers 39 and 41, 40 to 60 sport-fishing berths would be provided. The third major component of this phase would be a waterfront park of 1.9 acres.

In Phase II, facilities on Pier 39 would be expanded. Additional restaurants and shops would be provided on a small section of Pier 41. A parking garage would be constructed on the block bounded by the Embarcadero, Powell Street, Jefferson Street, and Beach Street.

IV. MODEL AND WIND TUNNEL FACILITIES

Model

A scale model of the proposed building and nearby structures was constructed of polystyrene and urethane foams, using blue-line prints supplied by the architect. A model of the structures surrounding the area for a distance of several blocks was constructed of polystyrene foam.

The model scale was one inch equals 30 feet. The model of the surrounding city area was built to this scale with building configurations and heights obtained from the Sanborn maps at the San Francisco Department of City Planning.

The model with the proposed buildings was placed on a turntable in the wind tunnel, allowing it to be turned to simulate the various wind directions.

Wind Tunnel Facilities

The Environmental Impact Planning Corporation boundary layer wind tunnel was designed specifically for testing architectural models. The working section is 7 feet wide, 43 feet long, and 5 feet high. Wind velocities in the tunnel can be varied from 3.5 mph to 13 mph. The flow characteristics around sharp-edged objects such as architectural models are constant over the entire speed range. Low speeds are used for photographing tracer smoke, high speeds for windspeed measurements.

Simulation of the characteristics of the natural wind is facilitated by an arrangement of turbulence generators and roughness upwind of the test section. These allow adjustments in wind characteristics to provide for different scale models and varying terrain upwind of the project site.

Measurements of windspeed around the model are made with a hot-wire anemometer, a device that relates the cooling effect of the wind on a heated wire to the actual windspeed. The flow above the city is measured by a Pitot tube connected to a micromanometer. The Pitot tube and micromanometer measure directly the pressure difference between moving and still air. This pressure difference is then related to the actual windspeed. Flow visualization is achieved by use of floodlit smoke.

V. TESTING METHODOLOGY

Simulation of Flow

The most important factors in assuring similarity between flow around a model in a wind tunnel and flow around the actual building are the structure of the approach flow and the geometric similarity between the model and the prototype. A theoretical discussion of the exact criteria for similarity is not included in this paper, but may be found elsewhere (Cermak 1966, or Cermak and Arya 1970).

The variation of windspeed with height (wind profile) was adjusted for the scale of the model and the type of terrain upwind of the site. The profiles used were those generally accepted as adequately describing the flow over that type of terrain (Lloyd 1967).

Testing Procedure

The wind-flow characteristics of the site in its present state were investigated to ascertain the present wind environment. Windspeeds and wind directions at specified points throughout the site were measured and recorded. Wind direction was measured by releasing smoke at each point and recording the direction in which the smoke traveled. Windspeed measurements were made at the same points, at a scale height of five feet above the ground. A hot-wire anemometer probe is required to make these measurements within a fraction of an inch of the model surfaces. The probe is repeatedly calibrated against the absolute reading of a Pitot tube and micromanometer. Velocity readings close to the model are generally accurate within 10 percent of the true velocity.

A similar technique was used to measure the wind environment with the proposed buildings in place. Measurements were taken around the buildings and on the adjacent streets.

Before and after each test run, a calibration measurement was made above the model. The purpose of these measurements was to relate the wind tunnel measurements to actual wind records from U. S. Weather Service wind instrumentation located on the Federal Building at 50 Fulton Street.

VI. TEST RESULTS AND DISCUSSION

Tests of windspeed and wind direction were conducted for four wind directions.

Measured windspeeds are expressed as percentages of the calibration windspeed, which corresponds to the actual windspeed at the San Francisco Weather Station. Thus a plotted value of 52 means that the measured windspeed is expected to be 52 percent of the windspeed recorded by the Weather Service when winds are from that particular direction.

The plotted values can be interpreted in terms of general "windiness" using the scale below. This scale is subjective and is based on information gathered from similar studies in San Francisco.

Velocity	Percentage of calibration windspeed
Low	0 - 19
Moderately low	20 - 29
Moderate	30 - 49
Moderately high	50 - 69
High	70 - 100
Very high	> 100

It should be noted that the plotted values are not actual windspeeds, but ratios. Thus a point having "very high" windspeed would still experience light winds on a near-calm day. Likewise, a point found to have "low" winds could experience significant winds on an extremely windy day.

Wind direction is indicated by an arrow pointing in the direction of flow. Where wind direction fluctuated, two arrows representing the principal flow directions were plotted. Areas of fluctuating winds are normally turbulent, as are areas of spiraling motion; the latter are denoted by curved arrows.

North Winds

North winds are not frequent in San Francisco, occurring from 1 to 3 percent of the time, depending on the season (in meteorology, a north wind blows from the north). They were considered, however, because of the site's extreme exposure to winds from this direction, and because they can occasionally reach high speeds, normally following the passage of a storm over the area.

Figure 1 shows windspeeds and wind directions during north winds at the existing site. Winds are generally low to moderate throughout the site; areas behind structures have the lowest speeds and considerable turbulence. Near the waterfront winds are moderately high between the piers. The highest winds are found at the end of Pier 39.

Completion of Phase I (Figure 2) increases windspeeds along the Embarcadero by removing the shelter effect of the Pier 39 structure. On Pier 39 itself, the rather complicated geometry of the buildings creates varying degrees of shelter; winds are mostly moderate in exposed areas and very light behind structures. The extreme end of the pier remains the windiest area.

Phase II winds are shown in Figure 3. The large number of low buildings is seen to be effective in reducing windspeeds downwind, along the Embarcadero. On Pier 39 itself the orientation of the structures produces generally low windspeeds, although there are areas of moderately high to high winds along the eastern edge of the pier. The shops and restaurants at the foot of Pier 41 experience moderate winds on their windward side but winds are light on the leeward side.

Northwest Winds

Northwest winds occur 12 to 39 percent of the time in San Francisco, depending on the season. Northwesterly and westerly winds are the most frequent and strongest winds at all seasons in San Francisco. Northwest winds exceed 13 miles per hour 35 percent of the time and 25 miles per hour 3 percent of the time in summer. Wind frequencies and speeds are lower in spring, fall, and winter.

The site is well exposed to northwest winds. Figure 4 shows windspeeds and directions during northwesterly winds. Winds along the Embarcadero are generally moderate to moderately high, with the highest winds found across from Pier 41. Near the Pier 39 structure winds are light and turbulent. East of Pier 39 winds are moderately high and somewhat turbulent.

Phase I wind conditions are shown in Figure 5. There are some minor reductions in windspeed along the Embarcadero, except near Pier 39, where winds are increased by the removal of the Pier 39 structure. Winds on the pier itself vary greatly with location. There are areas of considerable shelter behind and between the proposed structures, while the open areas of the parking lot experience moderate to moderately high windspeeds. The highest winds are again found at the end of Pier 39.

The greater number of structures in Phase II causes a reduction of winds throughout most of the site (Figure 6). The large number of trees causes a substantial reduction in winds along the Embarcadero, except east of Pier 39, where winds increase slightly. The restaurant-shop area at the foot of Pier 41 has light winds, as does the bulk of Pier 39. Moderate to high winds are found near the end of Pier 39 and in passages between some of the buildings.

West Winds

West winds occur between 15 and 40 percent of the time, depending on the season. West winds exceed 13 miles per hour 29 percent of the time and 25 miles per hour 7 percent of the time in summer. Wind strengths and frequencies are somewhat lower in spring, fall, and winter.

Figure 7 shows existing conditions during westerly winds. Windspeeds are moderate through most of the site; low winds are found close to the waterfront.

Construction of Phase I causes a minor increase in winds along the Embarcadero, with the greatest increase occurring near the entrance to Pier 39 (see Figure 8). Windspeeds remain moderate. The open parking areas on Pier 39 have moderately high winds, while the areas in front of the restaurants are sheltered. Winds at the end of the pier are low.

Construction of Phase II causes a general decrease in winds along the Embarcadero due to the sheltering effects of the restaurants and shops at the foot of Pier 41 and the large number of trees (see Figure 9). Winds near the entrance to Pier 39 are reduced considerably, as are winds throughout the bulk of the pier. Moderate winds occur at the end of the pier and in some passages between buildings.

Southwest Winds

Southwest winds occur on an average of 9 percent annually in San Francisco. Winds are highest in winter, when they exceed 25 miles per hour 2 percent of the time.

Because southwest winds approaching the site must travel over a considerable area of the city, the site is not overly exposed to winds from this direction. Existing conditions show winds to be low to moderate along the Embarcadero (Figure 10). The highest winds are found near the entrance to Pier 39. These winds also exhibit considerable turbulence.

Removal of waterfront structures in Phase I increases winds along the Embarcadero considerably, although turbulence is reduced (see Figure 11) winds are moderate and generally uniform across the waterfront. The parking areas are exposed to moderate to moderately high winds, as is the end of the pier. Winds along the front of the buildings are low, with moderate winds found in passageways between buildings.

Figure 12 shows wind conditions after completion of Phase II. The Embarcadero area is sheltered by the parking garage, resulting in dramatic decreases in windspeed. The area near Pier 41 is also sheltered, except near its western end. Windspeeds are further improved near the entrance to Pier 39. The entire Pier 39 area has low winds, except for passageways between buildings, where moderate winds occur.

Discussion

The models of Phases I and II contained a considerable number of trees as part of the project. These trees were assumed to be about 20 feet high and have full crowns.

Because there is a considerable reduction in winds due to the presence of these trees, planting of smaller or fewer trees would result in higher winds than those shown in the test results.

The windspeeds shown have been related to upper-level winds recorded at the Old Federal Building, 50 Fulton Street, San Francisco. These are currently the best data available. Because the North Point project is on the edge of the built-up area and is more directly in line with the Golden Gate wind gap, it is probable that the wind above the site could be somewhat higher, and the values shown on Figures 1-12 may be low by 10 to 20 percent, particularly for westerly and northerly wind directions.

VII. MICROCLIMATE IMPACT ANALYSIS

A. ELEMENTS OF COMFORT IN SAN FRANCISCO

The elements that influence comfort are temperature, humidity, sunshine, precipitation, and wind. The relative importance varies with geographic location and the characteristics of the local climate. For the San Francisco region, the most important factors are temperature, solar radiation, and wind.

Temperatures in San Francisco are moderate owing to the influence of marine air. Temperatures are highest in fall and coolest in winter; both spring and summer are normally cool, with a high frequency of low clouds and fog.

The intensity and frequency of sunshine are normally integrated into a single figure and expressed as "percentage of possible sunshine." San Francisco has two peak periods of sunshine, in April and in September. These months normally correspond to the transition periods between the strong marine airflow of summer and the transient storms of winter.

Wind in San Francisco is strongest in late spring and throughout the summer months, and lightest in winter. Summer winds have a large daily variation, with light winds during night and morning hours and peak winds in the afternoon. Westerly winds are dominant in all months but December and January.

B. MICROCLIMATE ANALYSIS

Sun-Shade Patterns

Sun-shade diagrams have not been prepared because information on the roof profiles of the project buildings is not available. A qualitative analysis is possible, however.

The project is an area of low-rise structures, so that shadows within the project are cast only by structures and trees on site.

The present site is shadowless during mornings and early afternoons, and shadowed during late afternoons.

Completion of Phase I opens Pier 39 to pedestrians. The site remains shadowless during all seasons in the morning and early afternoon. The center portion of Pier 39 is in shadow in late afternoon during fall, winter, and spring and in the early evening during summer. The park area, because of the large number of trees, is partly shaded in all seasons and at all times of day.

Completion of Phase II, as proposed, puts much of Pier 39 in shadow during the morning, late afternoon, and evening. Because of its north-south orientation, much of the site is shadowless on the late morning to midafternoon period during all seasons.

Comfort

Pedestrian discomfort in the wind is caused by mechanical effects (flapping clothing, blowing dust, and rain) and thermal cooling. The mechanical effects are usually assumed to occur above 11 miles per hour (Penwarden 1973); thermal cooling can cause discomfort at lower windspeeds.

Predicting frequency of discomfort due to thermal cooling requires detailed information on clothing levels and pedestrian activities, and correlations between windspeed, wind direction, and temperatures in San Francisco. A methodology has been developed to predict thermal discomfort combining these factors with wind tunnel results and information on solar radiation (Arens 1972); however, the detailed climatological information needed is not currently available.

An alternate technique has been used in this report of considering only mechanical wind effects to predict the frequency of discomfort. The results are an estimate of discomfort frequency that is conservative in that the effects of temperature, rain, and solar radiation are neglected in the calculations. These factors, however, are considered subjectively in the analysis of comfort.

The methodology of estimating discomfort involves predictig the frequency of 11-mile-per hour winds at each point of interest for each wind direction by combining the wind tunnel results with information on windspeeds from the San Francisco Weather Station on Fulton Street and San Francisco International Airport. These frequencies are then weighted by the proportion of time that the wind blows from each wind direction during the season of interest. The result is an objective estimate of pedestrian discomfort due to the mechanical effects of wind.

The comfort analysis was carried out for 1 p.m., 5 p.m., and 8 p.m. on the first day of each season. These hours were chosen as representing the times of day tourists or restaurant patrons would be on site.

The results of the comfort calculations are shown in Figures 13 through 20. They are expressed in the percent of time that discomfort due to mechanical winds effects is expected. It should be noted that, in general, fall and winter comfort frequencies calculated by this method are low because windspeeds are generally low. During these seasons rain may occur, however, and if it is assumed that it is always uncomfortable during rain, fall, winter, and spring discomfort frequencies are increased by 3, 12 and 5 percent respectively.

1 p.m.

Existing comfort conditions are shown in Figure 13. Discomfort frequencies are generally low for fall and winter, while relatively high discomfort frequencies (up to 30 percent of the time) are found across from and east of Pier 39.

The changing wind patterns on Phase I cause changes in discomfort frequencies (see Figure 14). Along the Embarcadero, some areas improve while others worsen. The open areas on Pier 39 experience high discomfort frequencies during spring and summer. The sheltered areas leeward of buildings have very low frequencies of discomfort.

The lower windspeeds associated with Phase II construction result in greatly lowered discomfort frequencies throughout the site. High discomfort frequencies are found only at the end of Pier 39 (see Figure 15).

5 p.m.

Predicted discomfort frequencies at 5 p.m. are very similar to those at 1 p.m. (see Figure 16). Actual discomfort would be higher due to lack of sunshine during the winter.

Predicted discomfort frequencies for Phase I at 5 p.m. are shown in Figure 17. Frequencies near the entrance to Pier 39 and the open parking areas are relatively high. Low frequencies are found near the center of the pier, although this area is shaded during fall, winter and spring.

Phase II discomfort frequencies are very similar to those at 1 p.m. Within the site frequencies are low, except at the end of Pier 39. At this time of day most of the site would be shaded at 5 p.m. except during summer. The park and Pier 41 area exhibit low discomfort frequencies (see Figure 18).

8 p.m.

At 8 p.m., the entire project is in shadow in all seasons. Calculated discomfort frequencies are lower than in the afternoon because of decreased winds.

Discomfort frequencies for the existing, Phase I, and Phase II conditions are shown in Figures 19, 20 and 21, respectively. The pattern is similar to that found in the afternoon hours. Phase I construction generally increases comfort along the Embarcadero, with relatively high discomfort near the entrance to Pier 39 and in the exposed parking areas. Discomfort decreases greatly with implementation of Phase II, except at the end of Pier 39.

VIII. MITIGATION MEASURES

Mitigation Measures Included in the Project

The project as proposed contains several features that serve to lessen pedestrian level winds and increase human comfort. The provision of trees within the park area greatly reduces winds along the Embarcadero. As mentioned earlier, use of trees smaller than those assumed for wind tunnel testing (20 feet high, full crown) would provide less wind protection.

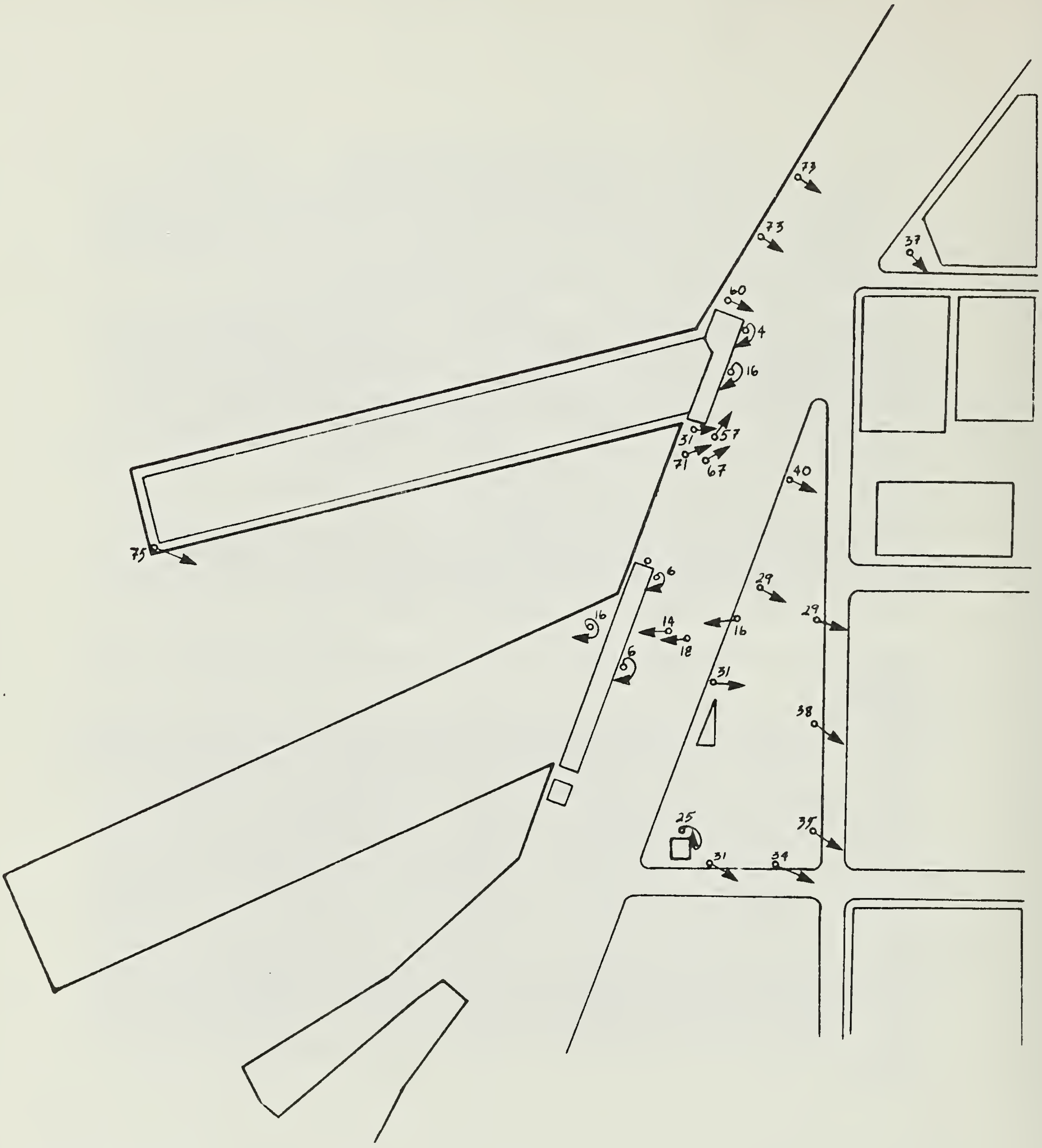
The arrangement of buildings on the pier in Phase II provides reasonable shelter for most of the pier area. The low one- and two-story buildings reduce wind accelerations around building corners.

Mitigation Measures That Could be Incorporated Into the Design

Several design modifications could possibly reduce winds and increase comfort further. Alternate building layouts, roof designs, tree spacing, and building orientation could provide greater shelter. A windbreak on the exposed northwest corner of the pier could lessen winds there. Further wind tunnel tests on a larger-scale model are currently being conducted to aid the designer in these areas.

The waiting area for the internal transit system is an important focus of pedestrian traffic. Reorientation and proper design could provide greater protection from the prevailing winds while increasing sunlight in the area.

FIGURE:1 MEASURED WINDSPEEDS AND DIRECTIONS **EXISTING PHASE**



Measured windspeeds are expressed as a percentage of the calibration windspeed, which corresponds to the actual windspeed at the San Francisco Weather Station.

WIND DIRECTION: N

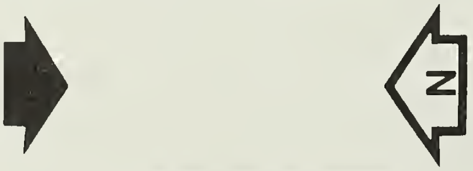
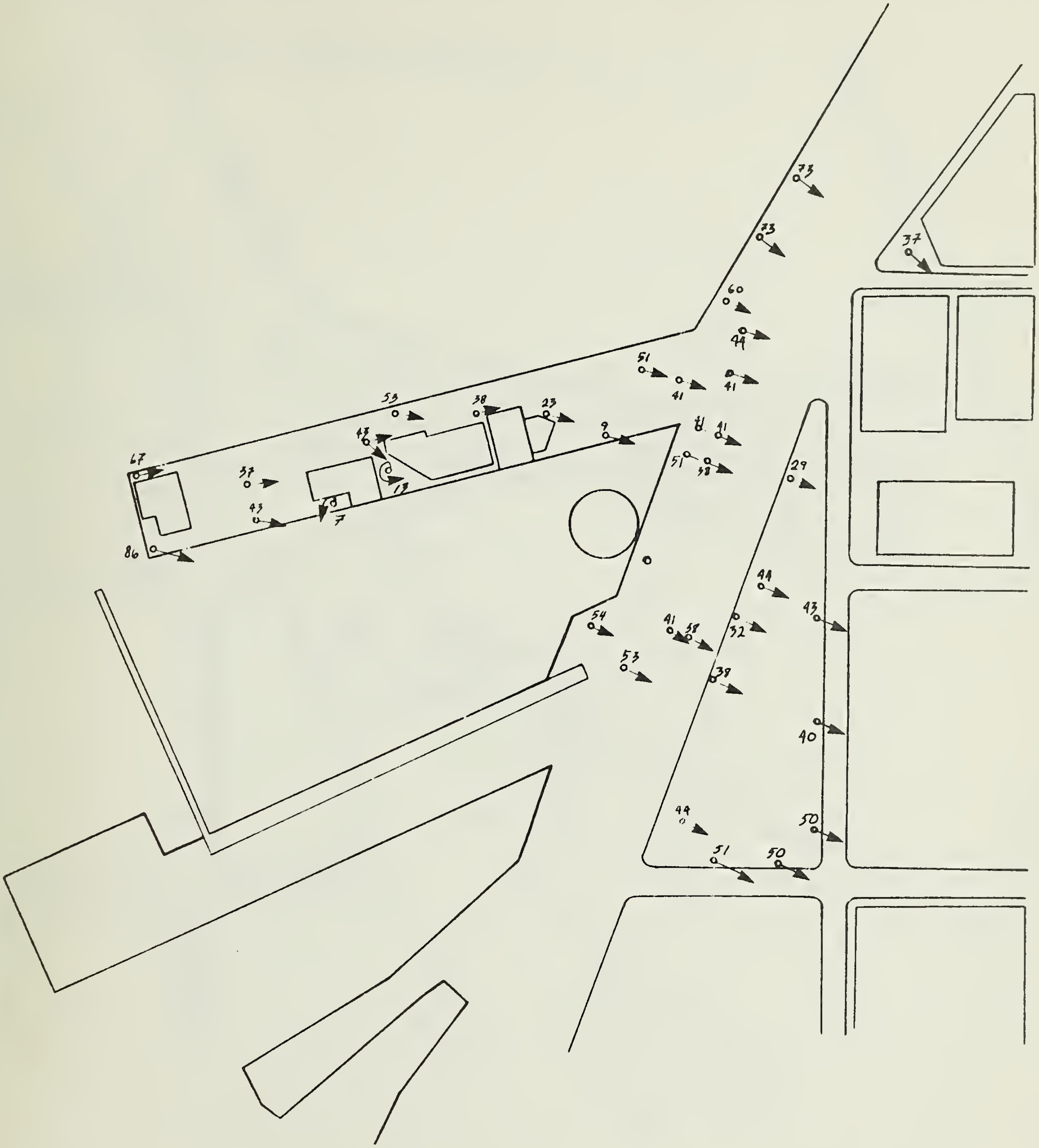


FIGURE:2 MEASURED WINDSPEEDS AND DIRECTIONS

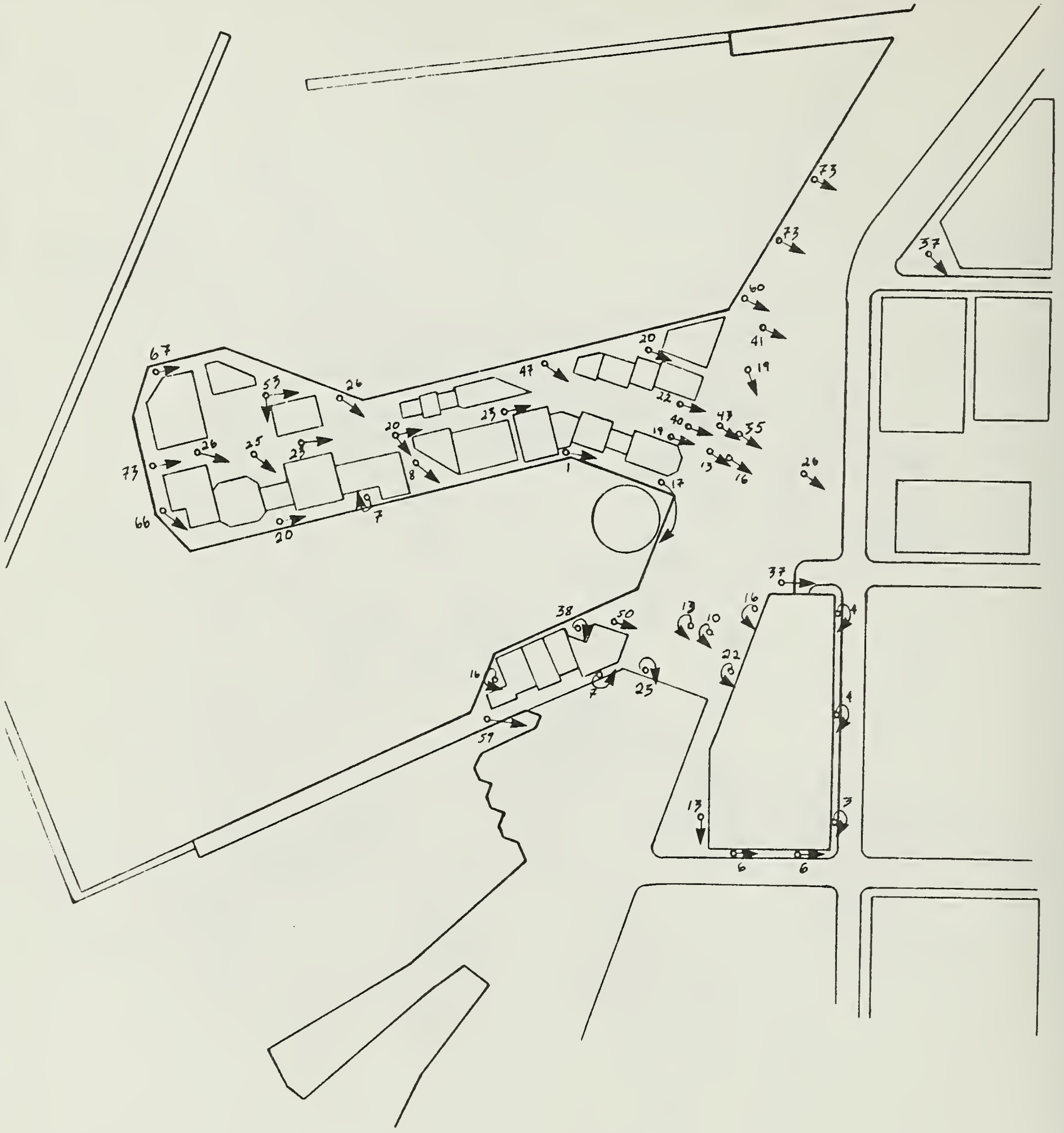
PROPOSED PHASE 1



Measured windspeeds are expressed as a percentage of the calibration windspeed, which corresponds to the actual windspeed at the San Francisco Weather Station.

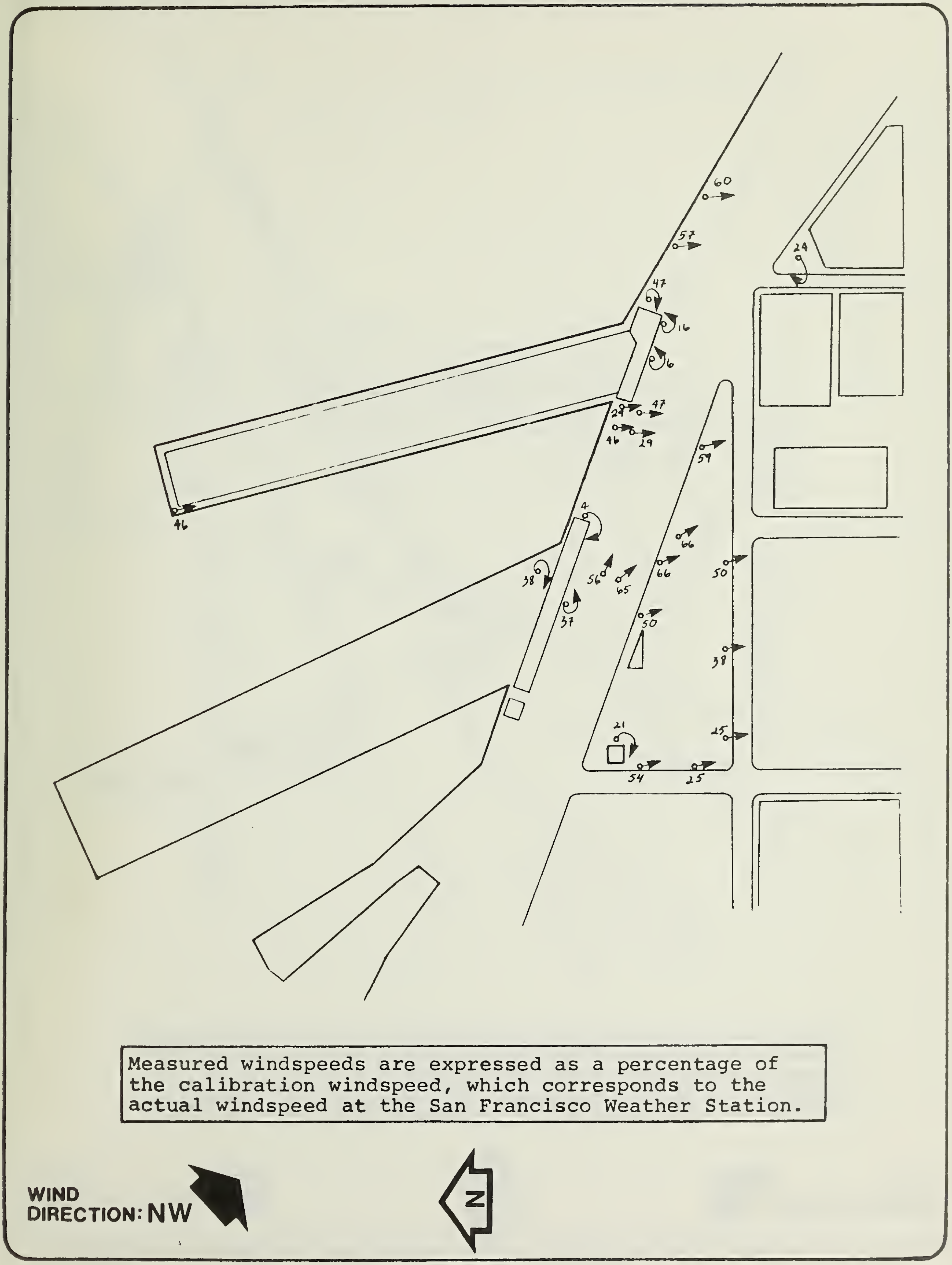
WIND DIRECTION: N

FIGURE:3 MEASURED WINDSPEEDS AND DIRECTIONS PROPOSED PHASE 2

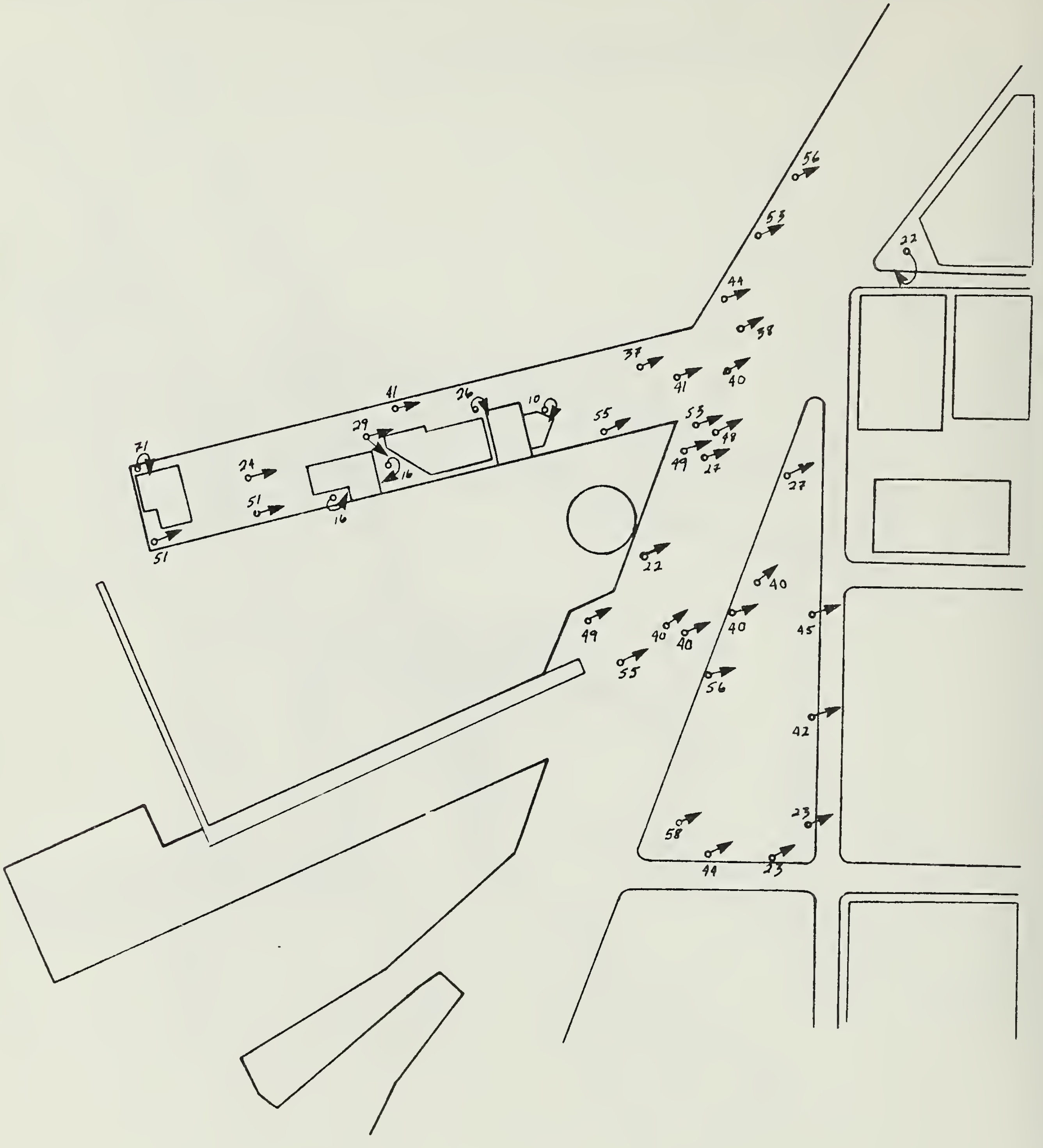


Measured windspeeds are expressed as a percentage of the calibration windspeed, which corresponds to the actual windspeed at the San Francisco Weather Station.

FIGURE:4 MEASURED WINDSPEEDS AND DIRECTIONS EXISTING PHASE



Measured windspeeds are expressed as a percentage of the calibration windspeed, which corresponds to the actual windspeed at the San Francisco Weather Station.



Measured windspeeds are expressed as a percentage of the calibration windspeed, which corresponds to the actual windspeed at the San Francisco Weather Station.

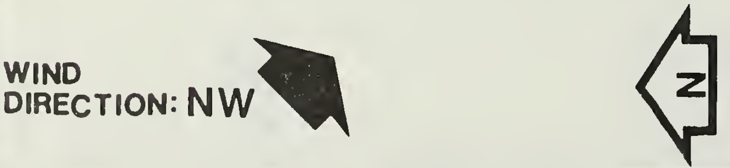
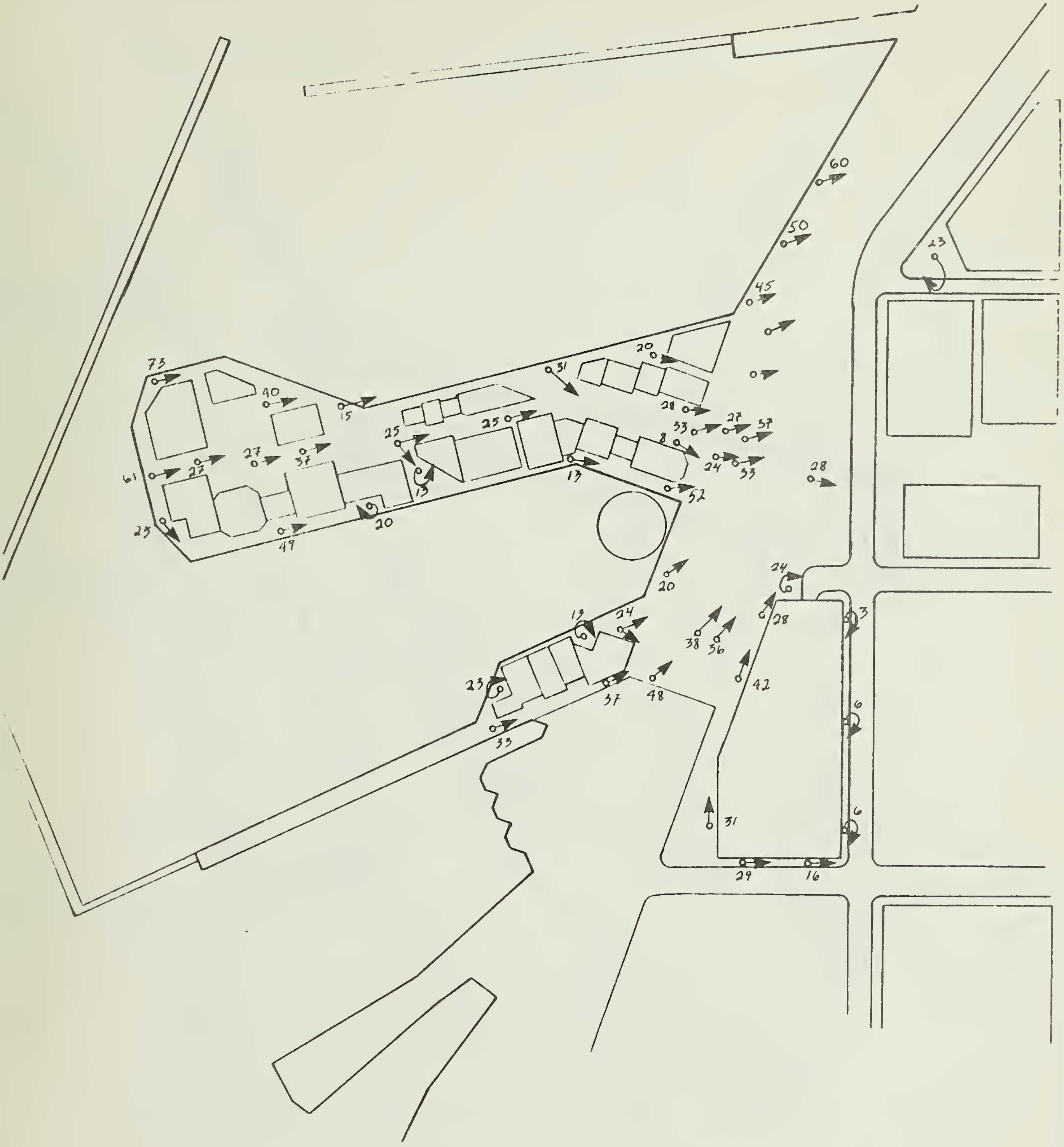


FIGURE:6 MEASURED WINDSPEEDS AND DIRECTIONS



Measured windspeeds are expressed as a percentage of the calibration windspeed, which corresponds to the actual windspeed at the San Francisco Weather Station.

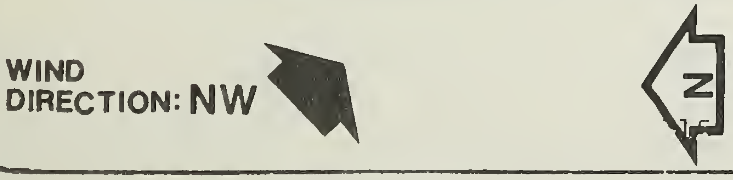
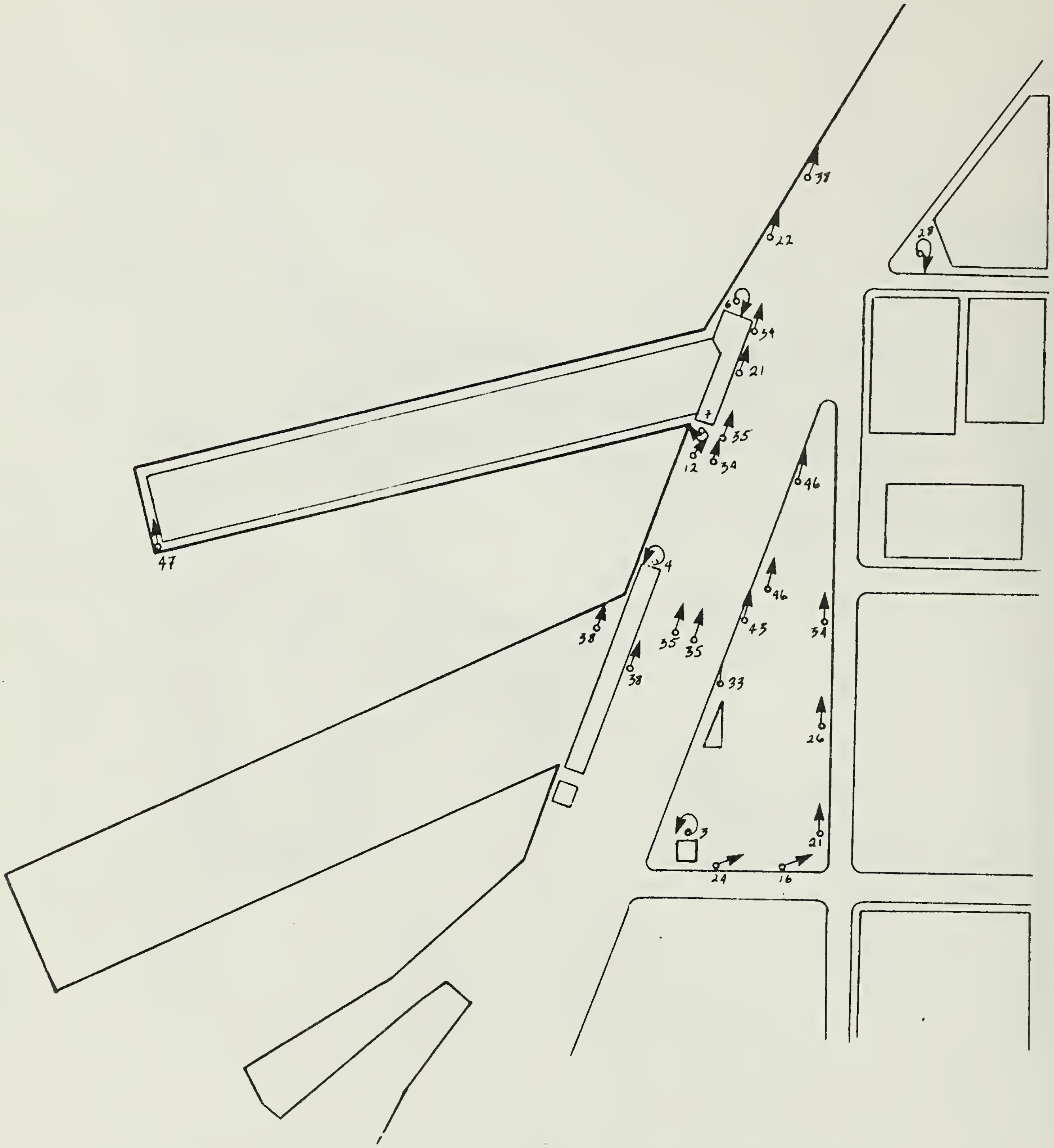


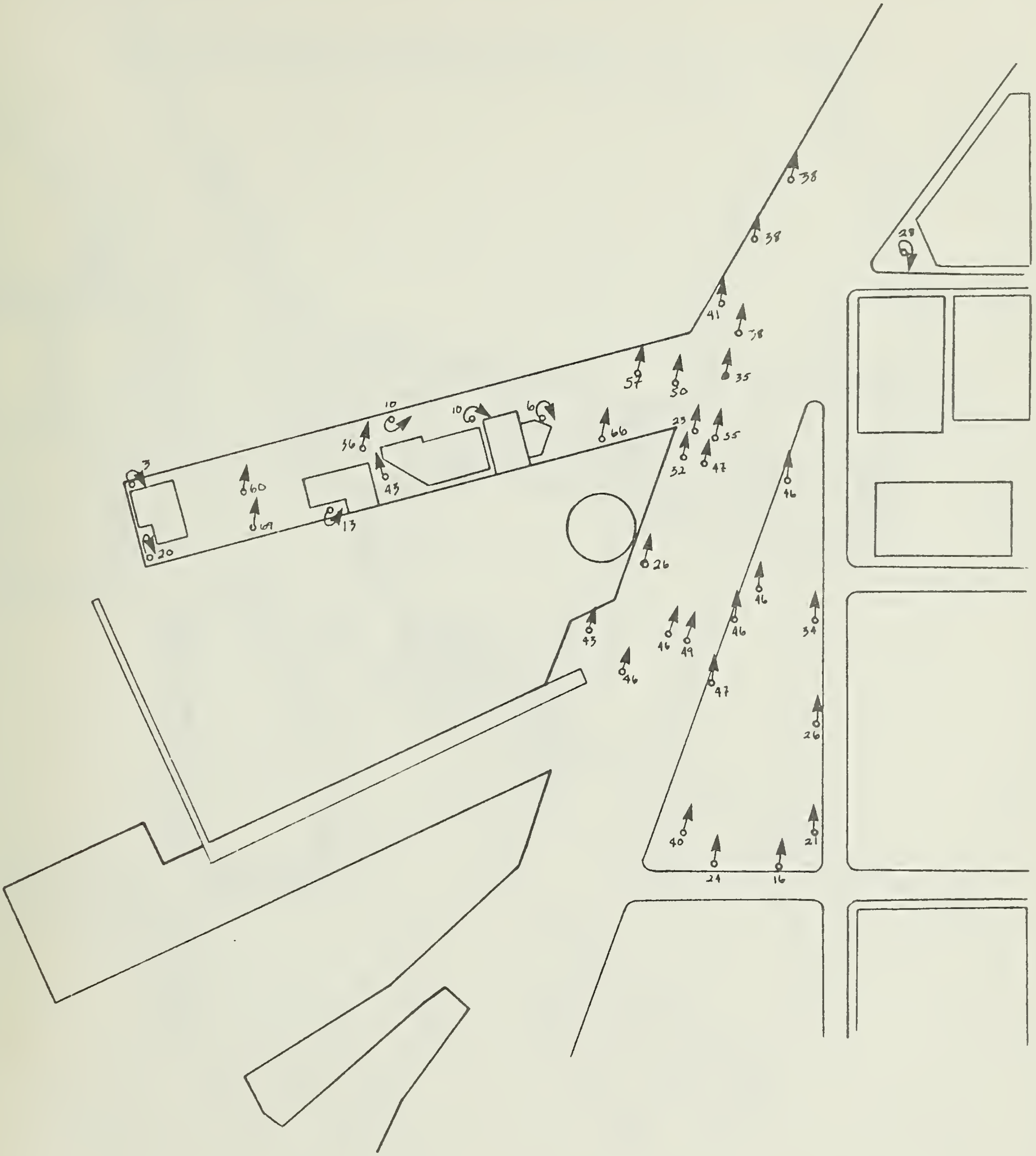
FIGURE:7 MEASURED WINDSPEEDS AND DIRECTIONS **EXISTING PHASE**



Measured windspeeds are expressed as a percentage of the calibration windspeed, which corresponds to the actual windspeed at the San Francisco Weather Station.

WIND DIRECTION: W

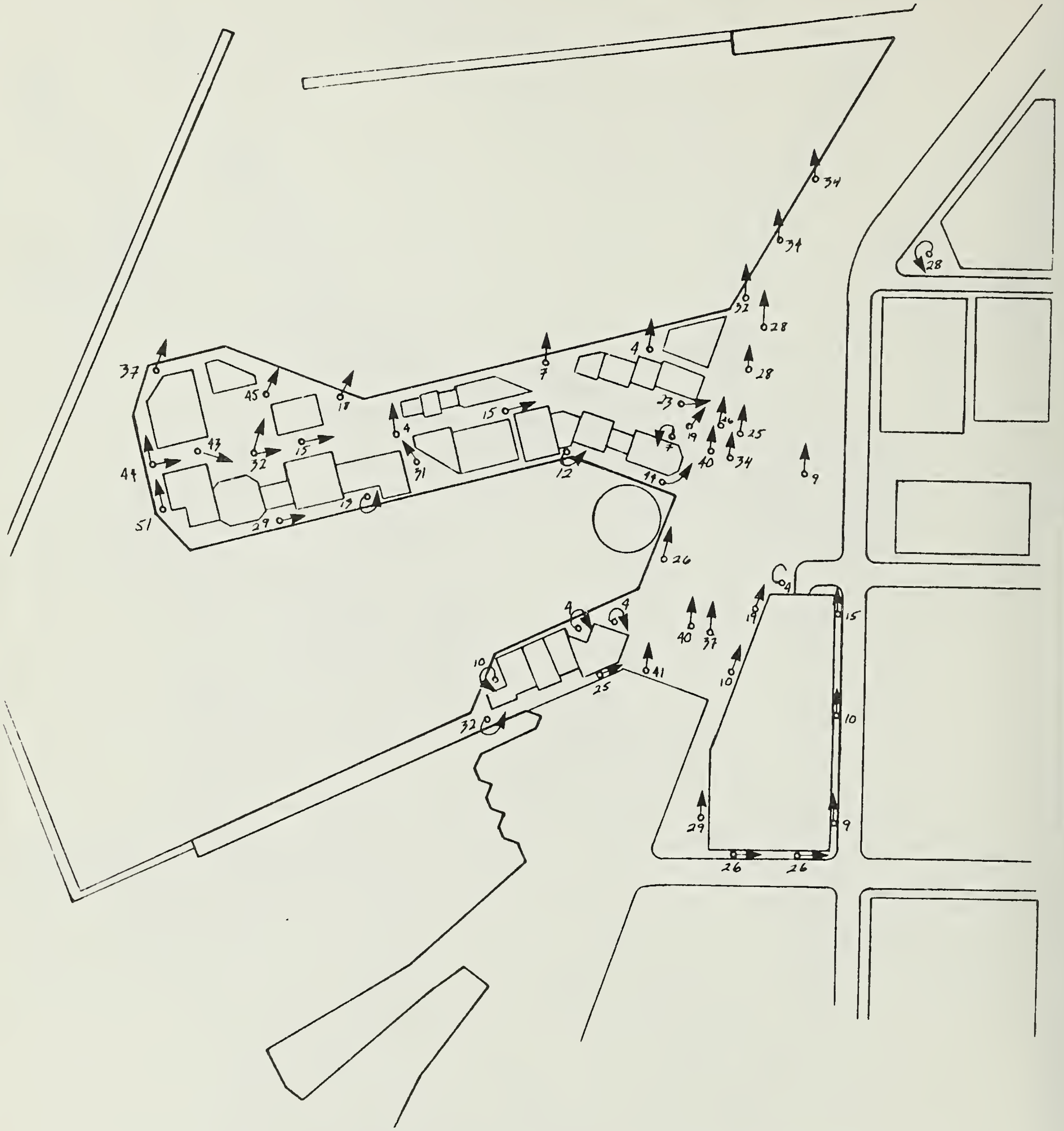
FIGURE:8 MEASURED WINDSPEEDS AND DIRECTIONS **PROPOSED PHASE1**



Measured windspeeds are expressed as a percentage of the calibration windspeed, which corresponds to the actual windspeed at the San Francisco Weather Station.

WIND DIRECTION: W

FIGURE:9 MEASURED WINDSPEEDS AND DIRECTIONS PROPOSED PHASE 2

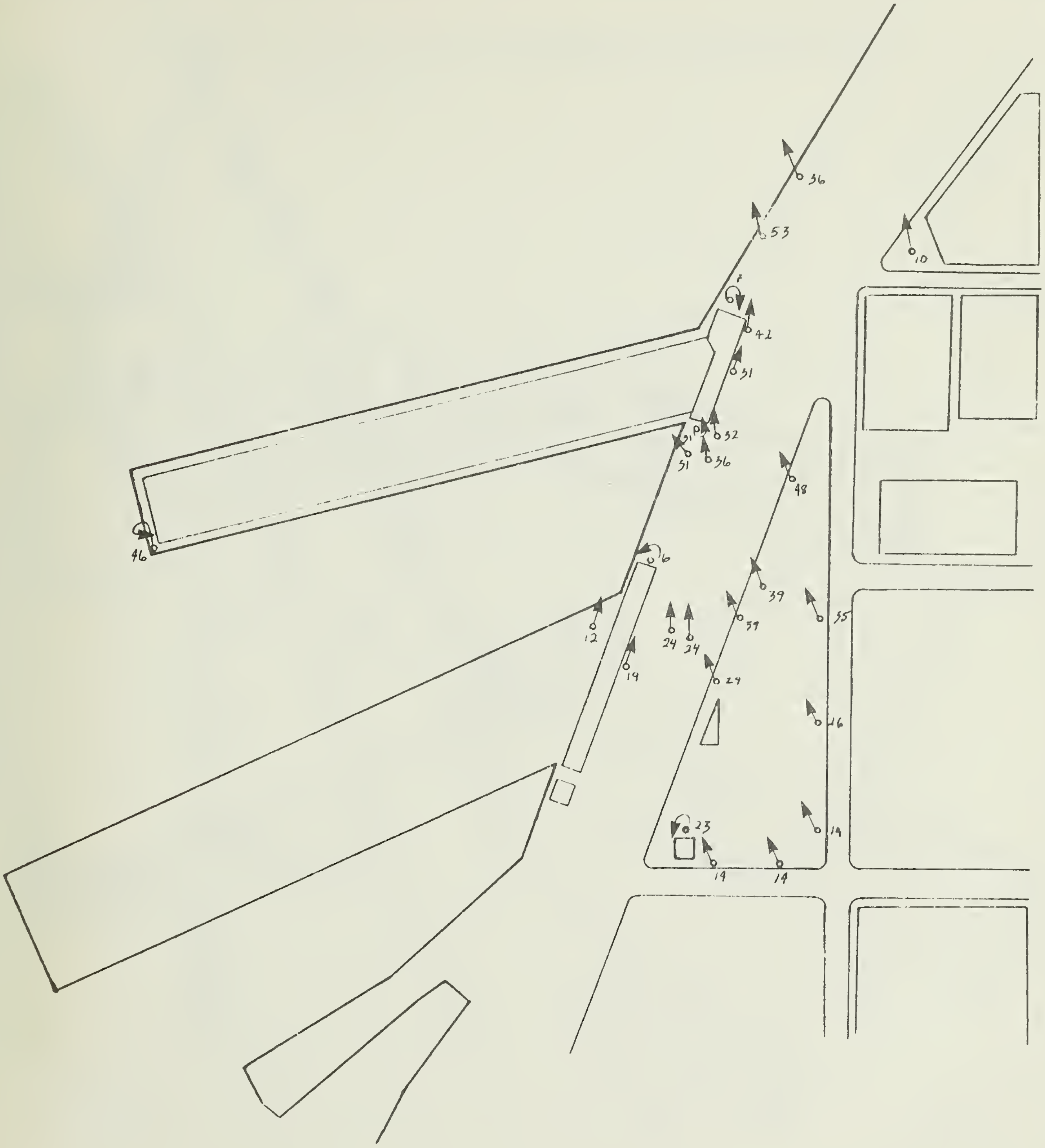


Measured windspeeds are expressed as a percentage of the calibration windspeed, which corresponds to the actual windspeed at the San Francisco Weather Station.

WIND DIRECTION: W

N

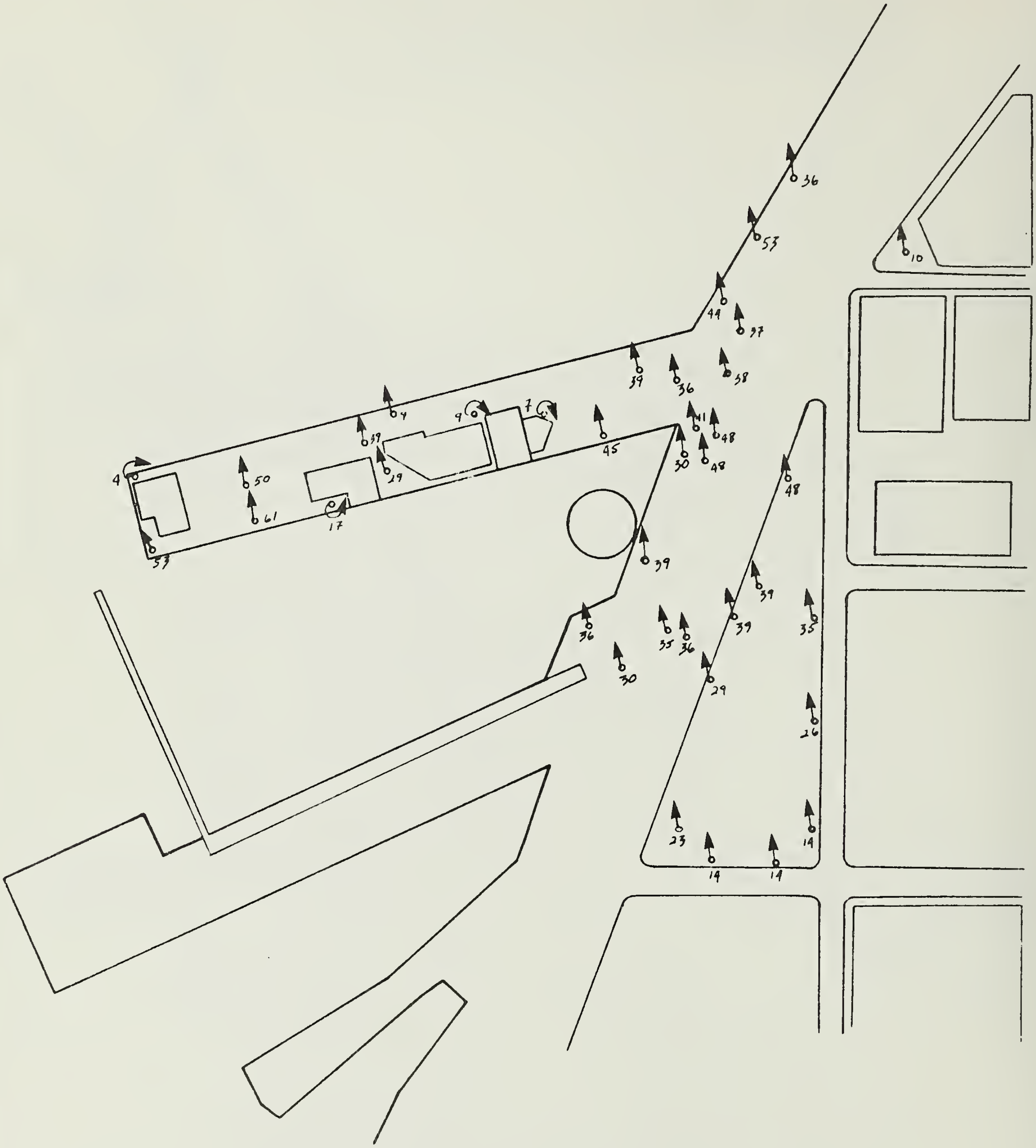
FIGURE:10 MEASURED WINDSPEEDS AND DIRECTIONS **EXISTING PHASE**



Measured windspeeds are expressed as a percentage of the calibration windspeed, which corresponds to the actual windspeed at the San Francisco Weather Station.

WIND DIRECTION: SW

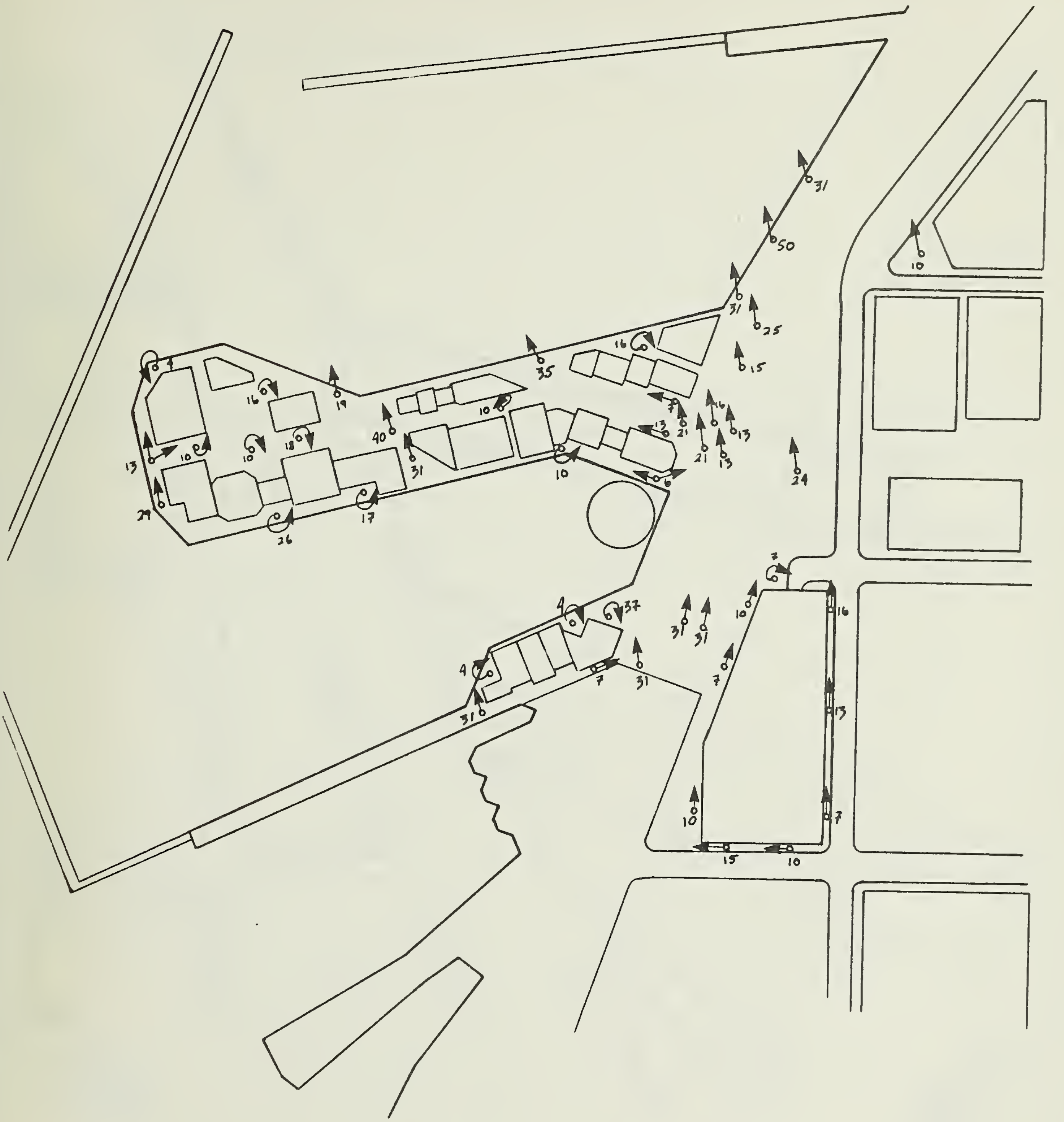
FIGURE:11 MEASURED WINDSPEEDS AND DIRECTIONS **PROPOSED PHASE 1**



Measured windspeeds are expressed as a percentage of the calibration windspeed, which corresponds to the actual windspeed at the San Francisco Weather Station.

WIND DIRECTION: SW

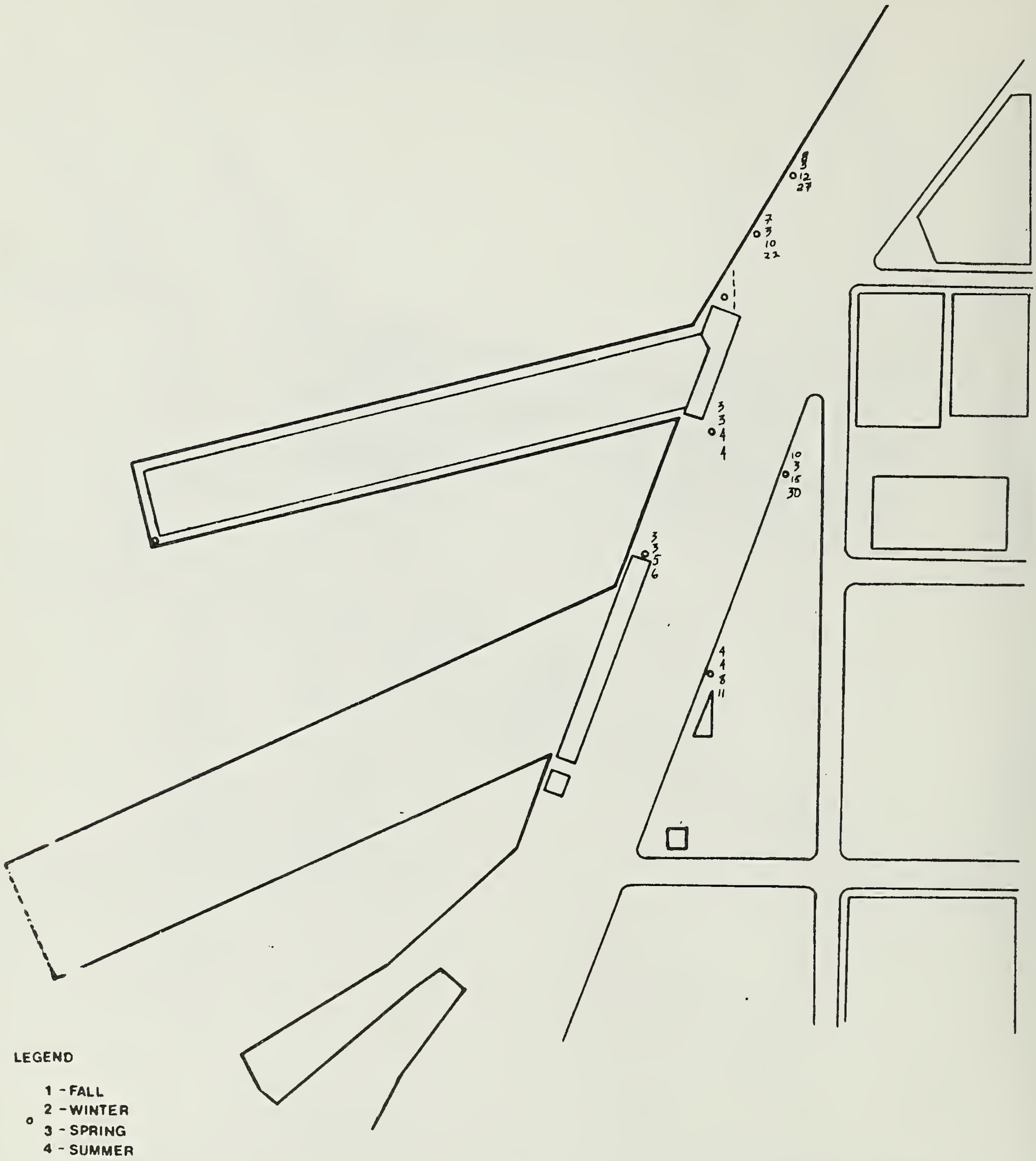
FIGURE:12 MEASURED WINDSPEEDS AND DIRECTIONS PROPOSED PHASE 2



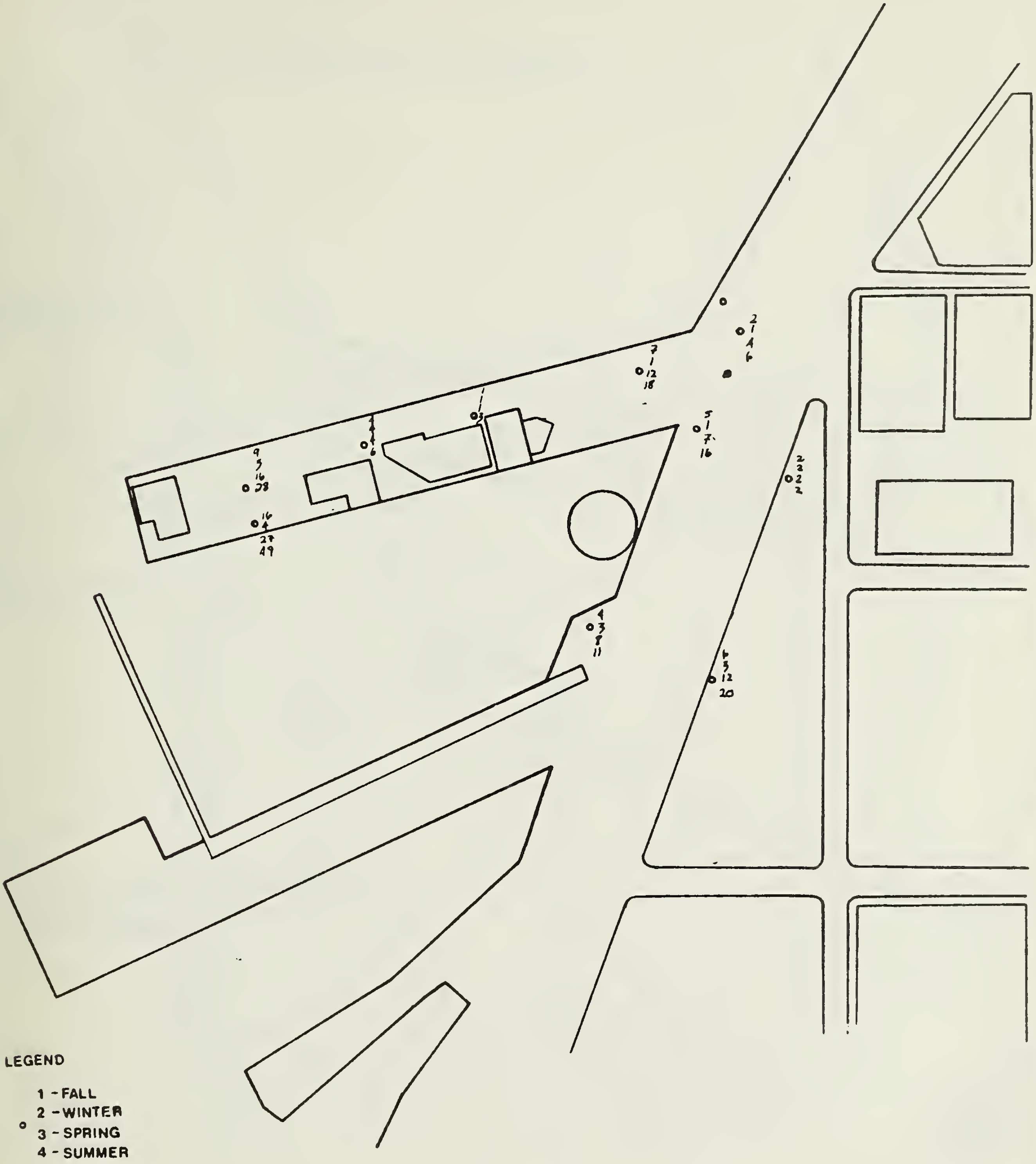
Measured windspeeds are expressed as a percentage of the calibration windspeed, which corresponds to the actual windspeed at the San Francisco Weather Station.

WIND
DIRECTION: SW

N



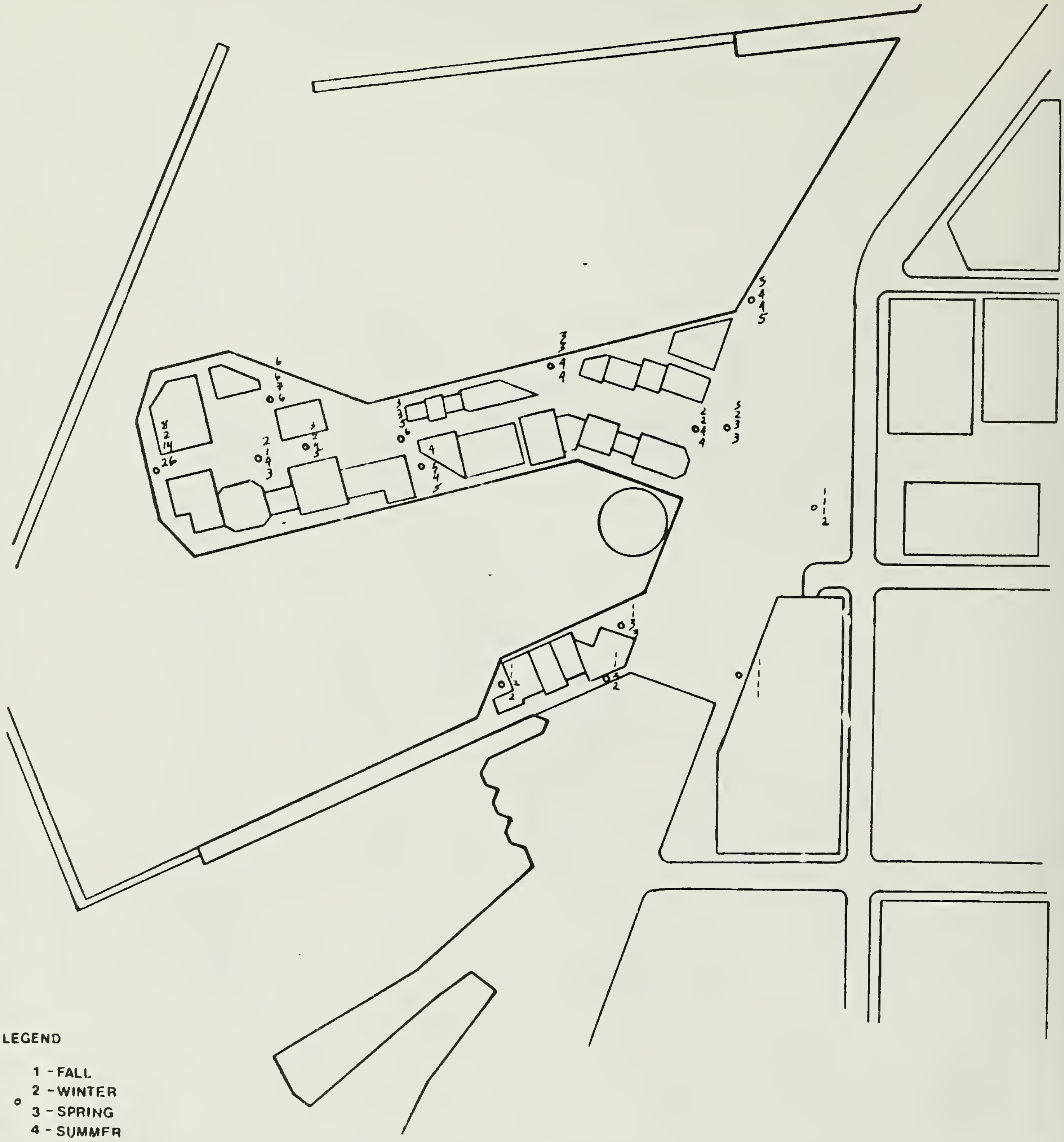
Frequency of discomfort as a result of physical effects is expressed as a percentage of time.



Frequency of discomfort as a result of physical effects is expressed as a percentage of time.

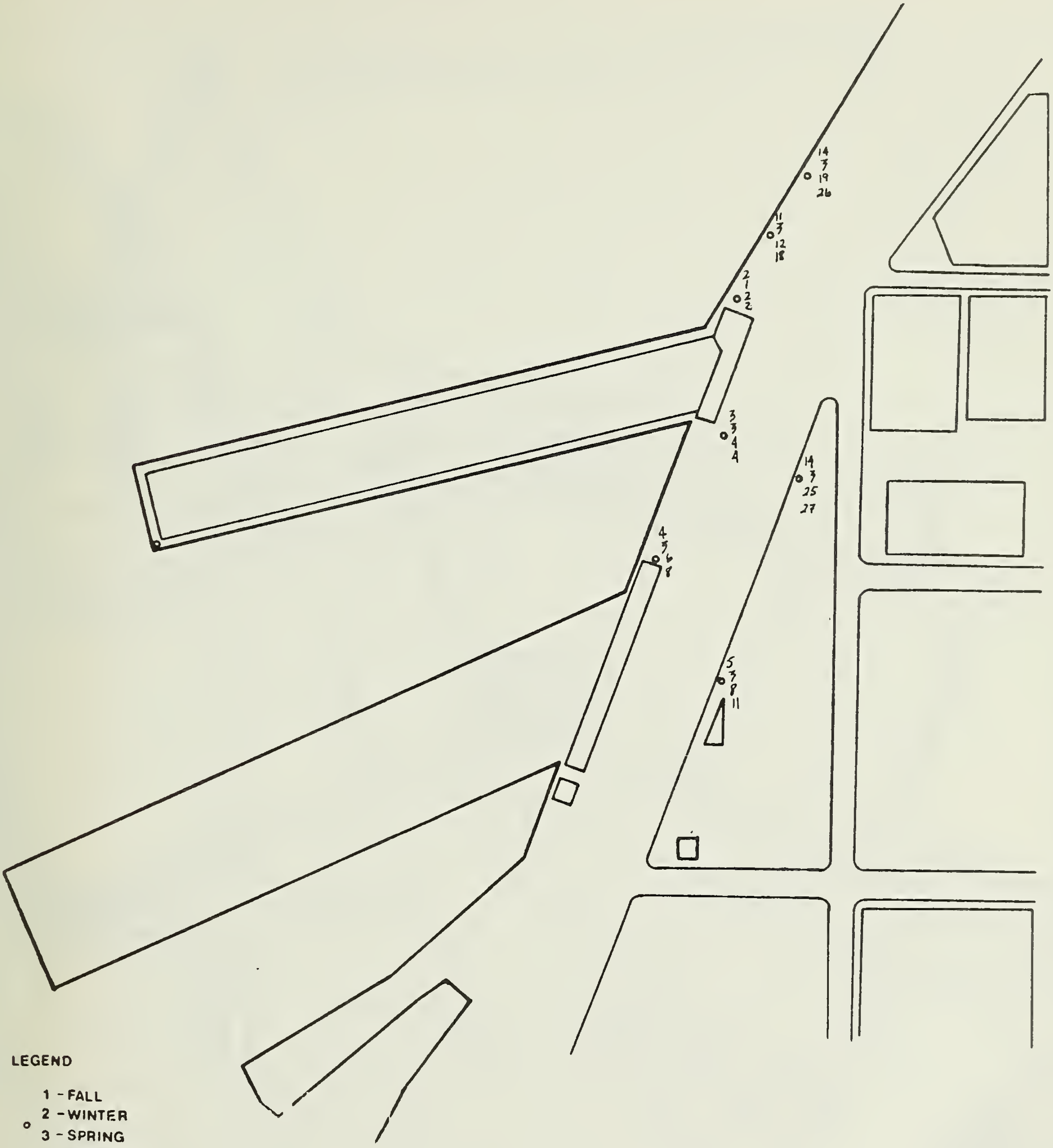
FIGURE:15 COMFORT DIAGRAM 1PM

PROPOSED PHASE 2



Frequency of discomfort as a result of physical effects is expressed as a percentage of time.

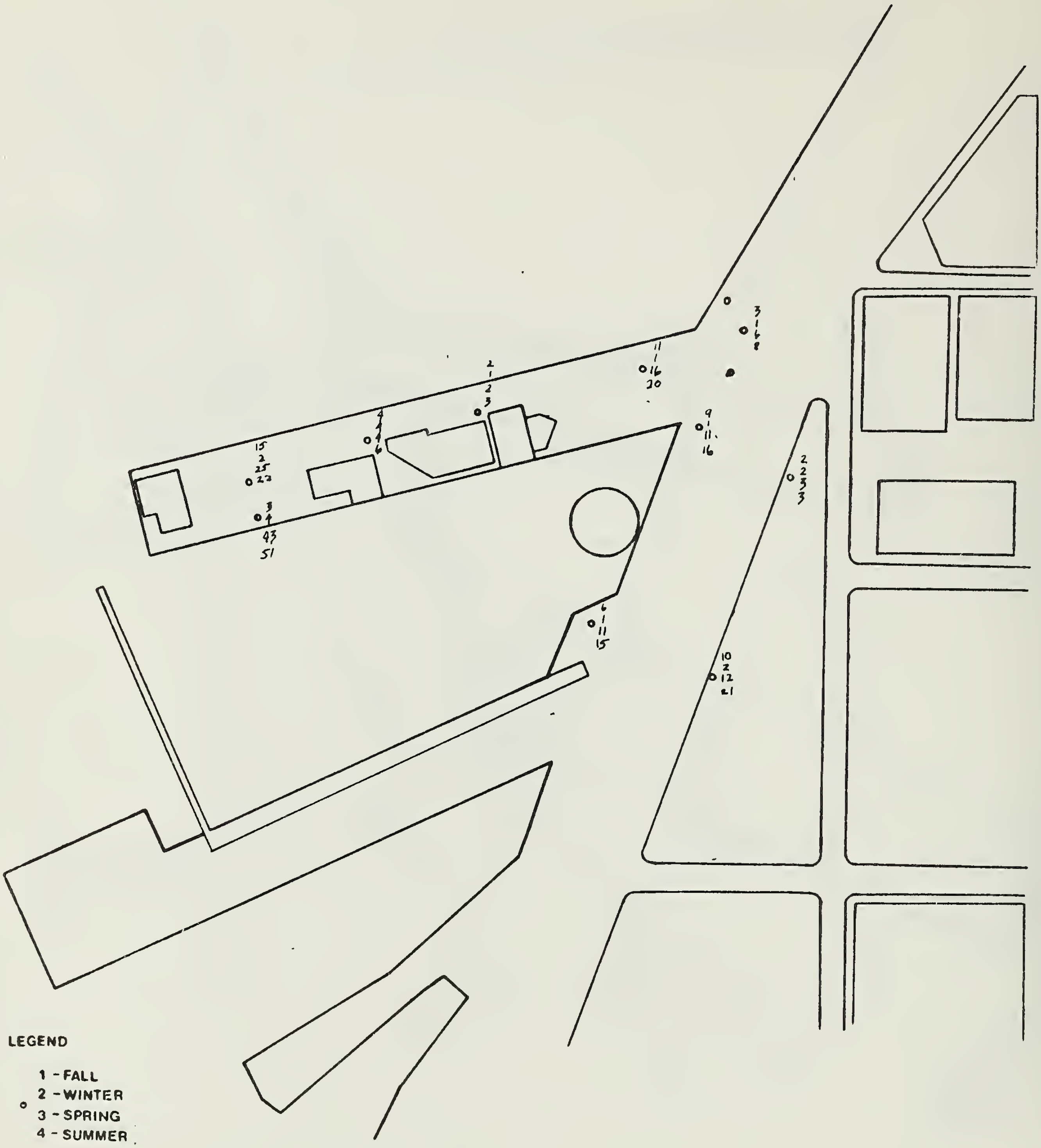
FIGURE:16 COMFORT DIAGRAM 5 PM EXISTING PHASE



Frequency of discomfort as a result of physical effects is expressed as a percentage of time.

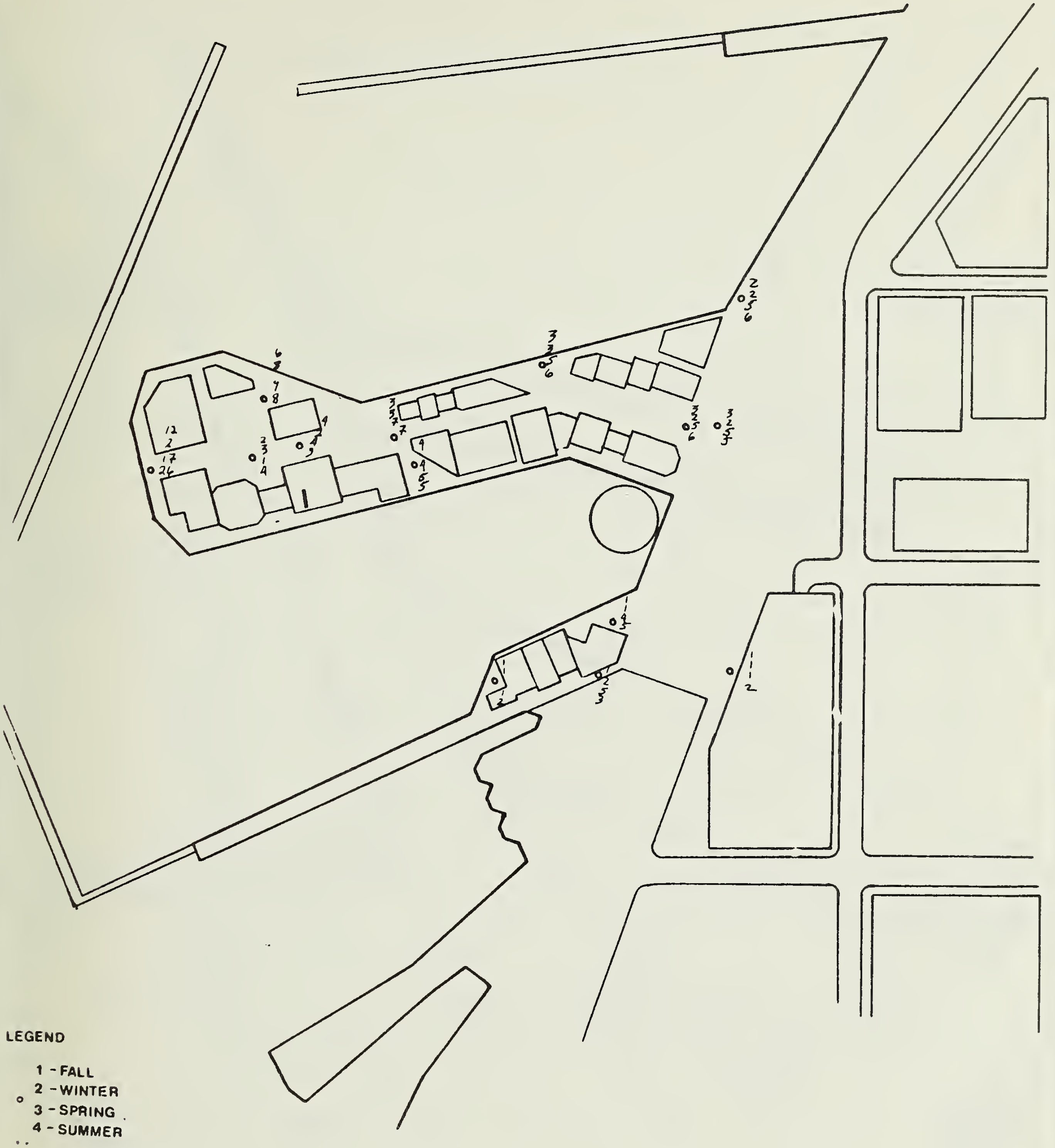
FIGURE:17 COMFORT DIAGRAM 5 PM

PROPOSED PHASE 1



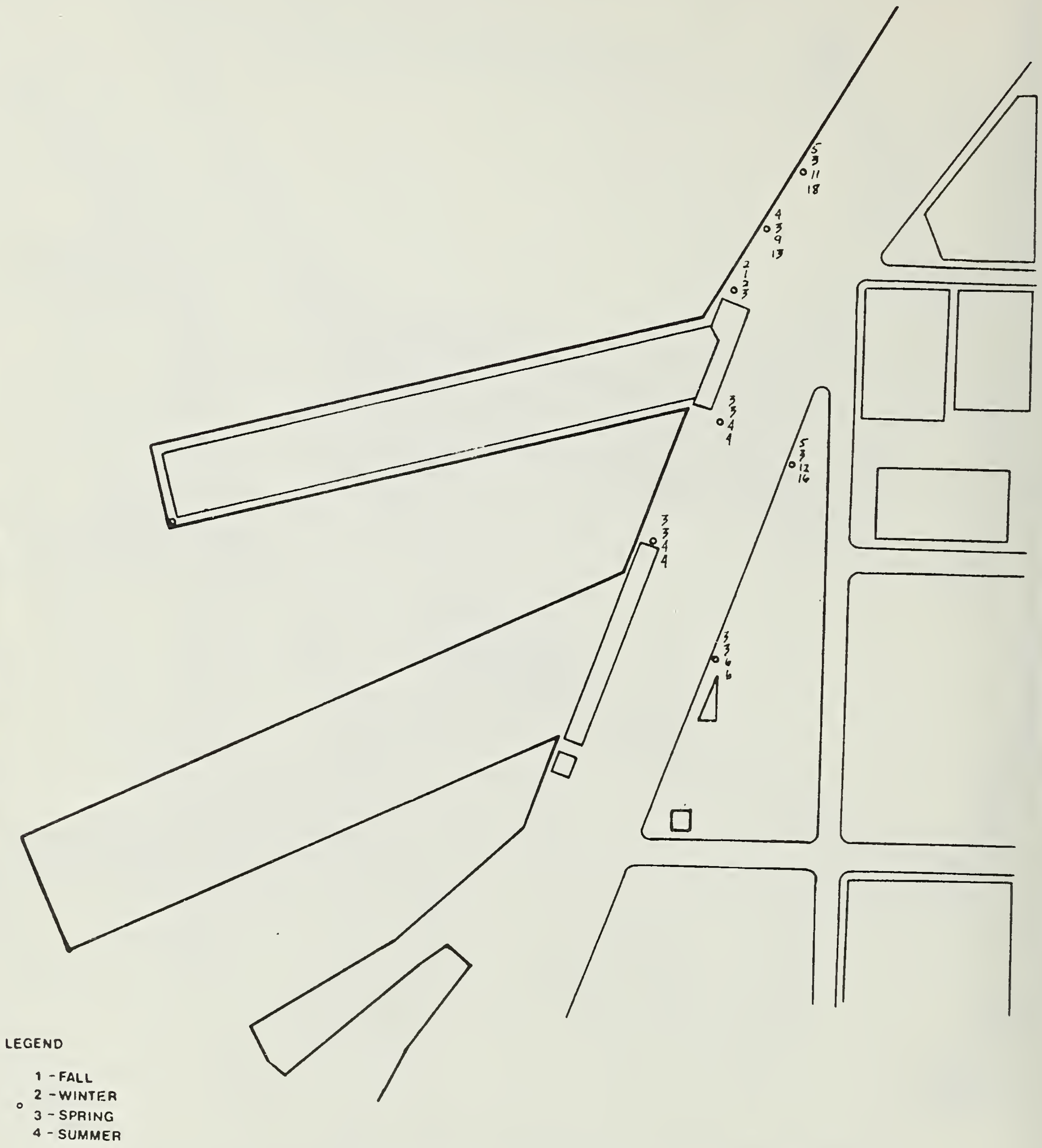
Frequency of discomfort as a result of physical effects is expressed as a percentage of time.

FIGURE:18 COMFORT DIAGRAM 5PM **PROPOSED PHASE 2**



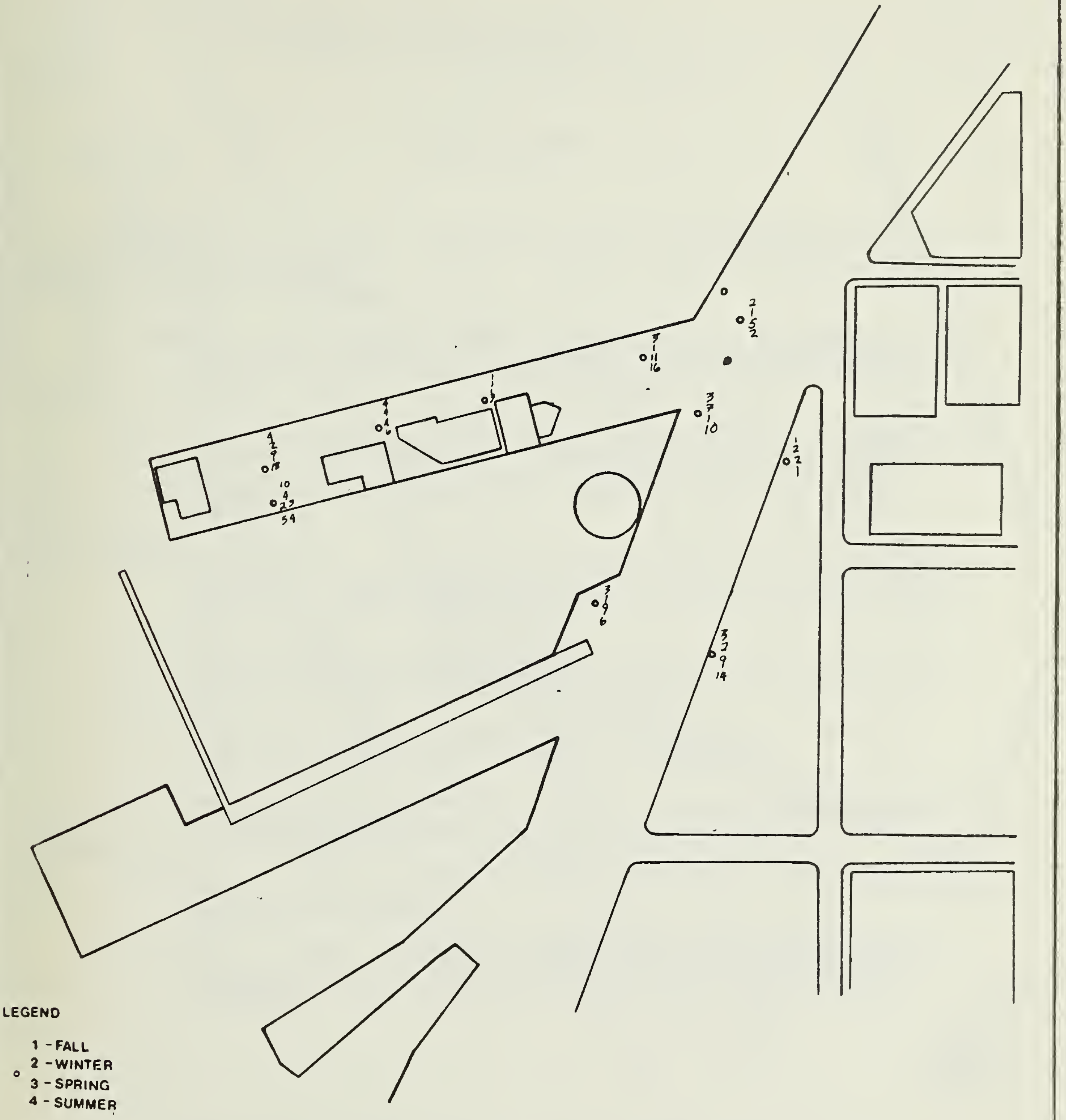
Frequency of discomfort as a result of physical effects is expressed as a percentage of time.

FIGURE:19 COMFORT DIAGRAM 8PM **EXISTING PHASE**



Frequency of discomfort as a result of physical effects is expressed as a percentage of time.

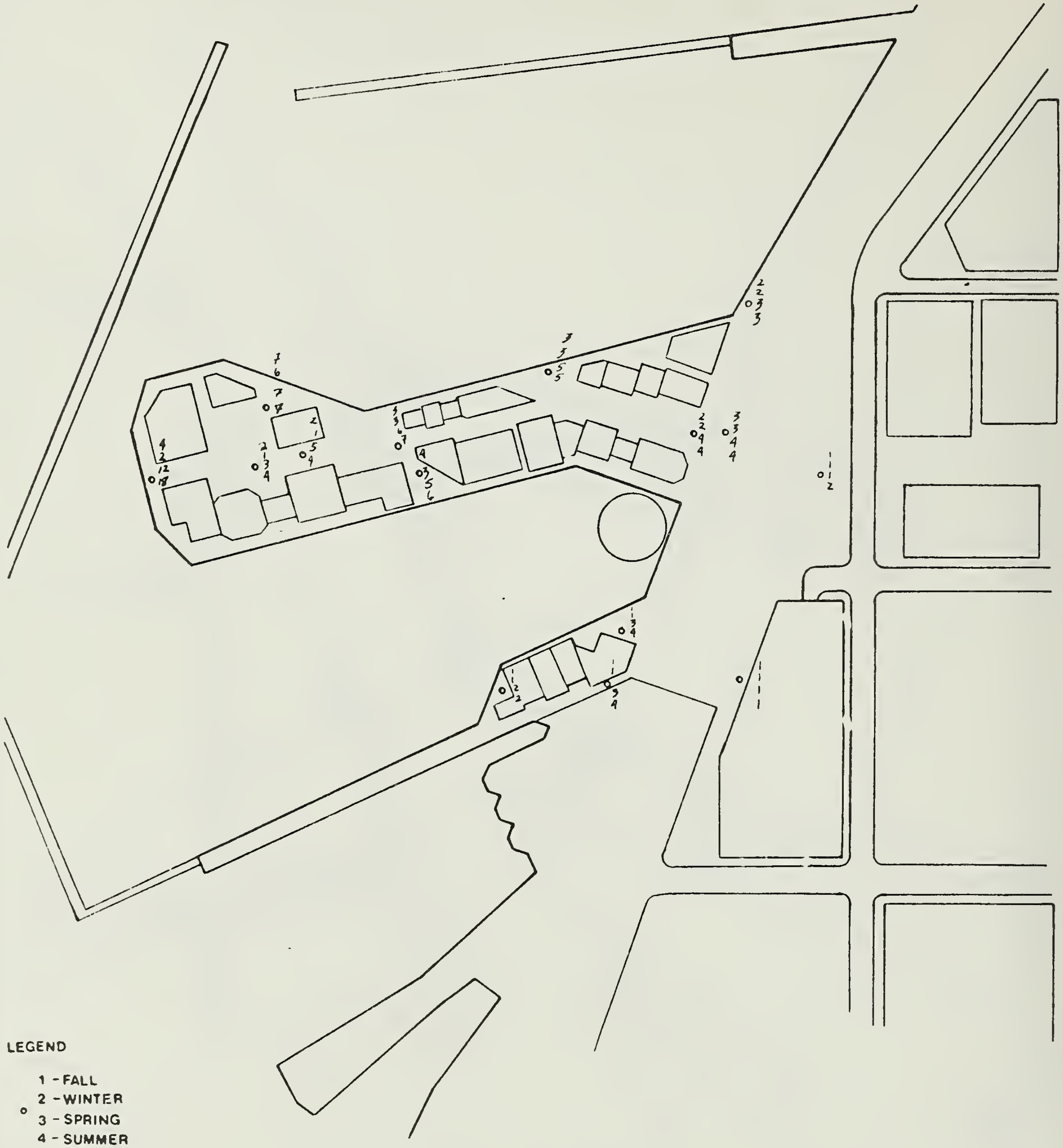
FIGURE:20 COMFORT DIAGRAM 8PM **PROPOSED PHASE 1**



Frequency of discomfort as a result of physical effects is expressed as a percentage of time.

FIGURE:21 COMFORT DIAGRAM 8PM

PROPOSED PHASE 2



Frequency of discomfort as a result of physical effects is expressed as a percentage of time.

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APPENDIX D

POLICE DEPARTMENT
CITY AND COUNTY OF SAN FRANCISCO
HALL OF JUSTICE
850 BRYANT STREET
SAN FRANCISCO, CALIFORNIA 94103

ADDRESS ALL COMMUNICATIONS:
DONALD M. SCOTT
CHIEF OF POLICE

OFFICE OF THE
CHIEF OF POLICE

RECEIVED OCT 14 1975

IN REPLY, PLEASE REFER TO
OUR FILE: PR-396

October 10, 1975

Miss Ruth Schleef
Environmental Impact Planning Corp.
319 Eleventh Street
San Francisco, California 94103

Dear Miss Schleef:

Attached hereto you will find a report which contains the estimated cost impact to provide police services to a proposed development on Piers 37 to Pier 49.

Very truly yours,

DONALD M. SCOTT
Chief of Police

By: Michael F. Lennon
Michael F. Lennon, Lieutenant
Officer-in-Charge
Planning and Research Bureau

#12

Encl.

ENVIRONMENTAL IMPACT REPORT

EVALUATION OF POLICE SERVICES

FOR

ENVIRONMENTAL IMPACT PLANNING CORPORATION

Prepared for:

Lieutenant Michael Lennon
Officer-in-Charge
Planning and Research Bureau

By: Officer Robert Bernardini

October 1975

Under the provisions of San Francisco Planning Commission Resolution No. 6910 and required Environmental Evaluation Form, the organization known as Environmental Impact Planning Corporation, 319 Eleventh Street, San Francisco, has requested that the San Francisco Police Department determine:

PROBLEM: Estimate the cost to provide police services to a proposed project containing 45,000 square feet of restaurants and shops, a parking facility for 250 cars and sport fishing berths, employing 140 - 165 persons to be located on Piers 37, 39 and 41.

The second phase of the project would contain an additional 95,000 square feet of restaurants, 250 boating berths, 63,500 square feet of offices, a 1,000 car garage and a park, employing an additional 510 - 685 people.

METHOD: Statistical information used to project the impact of the project's cost for police services will be derived from a portion of United States Census Tract 101, San Francisco Police Plot A-56 - 63, Department of Public Works Downtown Traffic Survey and other empirical inputs.

1. Establish the average number of incidents for which a police report was generated in the project area during a 12-month period. The general area, Police Plot A-60 and 62, generated 363 reported incidents, which represents 26.8% of the incidents occurring in Census Tract 101.

2. Compute the existing ratio of reported incidents per thousand population in Census Tract 101. The results indicate that 158.8 incidents were generated for every one thousand persons. If the first phase of the project increases the current population through the employment of 140 - 165 persons, we could expect a maximum of approximately 22.2 - 26.2 reported incidents per year. If the second phase increases the population through employment to an additional 510 - 685, which would make an aggragate of 750 - 850, we could expect a maximum increase of approximately 119.1 - 134.9 reported incidents per year.

3. Establish the average number of vehicles that could be generated by the proposed development. Utilizing traffic generation data, provided by the San Francisco Downtown Parking Report, prepared by the San Francisco Department of Public Works, we believe that the 63,500 square feet of offices and 140,000 square feet of commercial retail - restaurants will probably generate 442 additional vehicles per day.

   In addition, if the construction phase of the project requires the detouring or reduction of available driving lanes, the San Francisco Police Department would have to determine the additional number of traffic control personnel required.

CONCLUSION: It should be clearly understood that the preceding projections are based upon the past activities reported in the project area and other geographical areas which have some similarity to the proposed project. We have purposely ignored some variables which could easily increase or decrease our projections. The correlation between these variables, social conditions, income level, ethnic make-up, and physical structures to crime are not clearly understood. The estimated costs for police services are based upon a comparison of the annual Department budget to the number of reported incidents. Therefore, given the above limitations, we feel that the proposed project could require an increase of $74,437 - $84,312 per year for police services.

APPENDIX E

CITY AND COUNTY OF SAN FRANCISCO

SAN FRANCISCO FIRE DEPARTMENT

OFFICE
CHIEF OF DEPARTMENT

260 GOLDEN GATE AVE.
SAN FRANCISCO, CA. 94102

RECEIVED OCT 2 1975

September 29, 1975

Ms. Ruth Schleef
Environmental Impact Planning Corporation
319 Eleventh Street
San Francisco, California 94103

Dear Ms. Schleef:

In response to your letter of September 9, 1975, please be advised as follows:

The fireboat "Phoenix" is one of our first line fire fighting units and routinely responds to alarms along the waterfront or within reasonable hose line reach of the waterfront. Whenever the "Phoenix" goes to a shipyard for service or repair, fire fighting equipment is transferred to the "Frank G. White," which subsequently responds in the Phoenix' place.

Current response to alarms at Pier 39 consists of three engine (pumper) companies, two truck (ladder) companies, one hosetender, two chiefs, one rescue squad and the fireboat. The first company can be expected on the scene in no more than three minutes. The fireboat travel time is estimated at between fifteen and twenty minutes.

Provided that the project complies with all applicable codes, Phase I should pose no special problems. The same would apply to Phase II, except for the possible closing off of the Embarcadero at Kearny Street. This last contingency would require detailed study by the City's Interdepartmental Committee on Traffic and Transportation (ISCOTT).

Very truly yours,

R A Gautier

Rene' A. Gautier, Chief
Division of Planning and Research

RECEIVED OCT 6 1975

CITY AND COUNTY OF SAN FRANCISCO

SAN FRANCISCO FIRE DEPARTMENT

OFFICE
CHIEF OF DEPARTMENT

260 GOLDEN GATE AVE.
SAN FRANCISCO, CA. 94102

October 3, 1975

Ms. Ruth Schleef
Environmental Impact
Planning Corporation
319 Eleventh Street
San Francisco, California 94103

Dear Ms. Schleef:

To answer your inquiries in your letter of October 2, 1975 regarding emergency rescue services, the great preponderence of such calls are associated with cardiac/respiratory assistance; having many more stations than the Emergency Ambulance System we are called upon to render first echelon assistance to the stricken pending arrival of an ambulance. Our records show a very low incidence rate on the waterfront as related to other areas of the city for this type of service.

Other classes of emergency rescue services such as those involving accidents, industrial or otherwise, are not localized to any particular area except as related to population density and commercial areas generally. For these incidents our ladder trucks are fairly well equipped and trained to handle, and in addition we have two rescue squads and an utility unit with specialized equipment and men trained for its use. We also have an Underwater Rescue Unit for primary use at the waterfront (they also have performed often at Lake Merced and in the reservoirs).

The amount of added services required of the Fire Department by reason of opening the piers to the public is purely speculative and we have no record of any effect on past innovations such as the Maritime Exhibit at the foot of Hyde Street, or the Balclutha exhibit, etc.

The Bureau of Fire Prevention made a presentation to the Port Authority concerning the hazards associated with the various piers and you may contact them (Chief Emmet D. Condon) for such information. The Bureau also sets the regulations for converting the piers to other uses, including residence or public assembly; this is normally done on an individual basis by reviewing proposed plans and weighing the hazards introduced.

With hopes that this may be of some value, I am

Very truly yours,

Rene' A. Gautier, Chief
Division of Planning and Research

RAG:csc

APPENDIX F

TRANSPORTATION STUDY

Alan M. Voorhees and Associates, Inc.

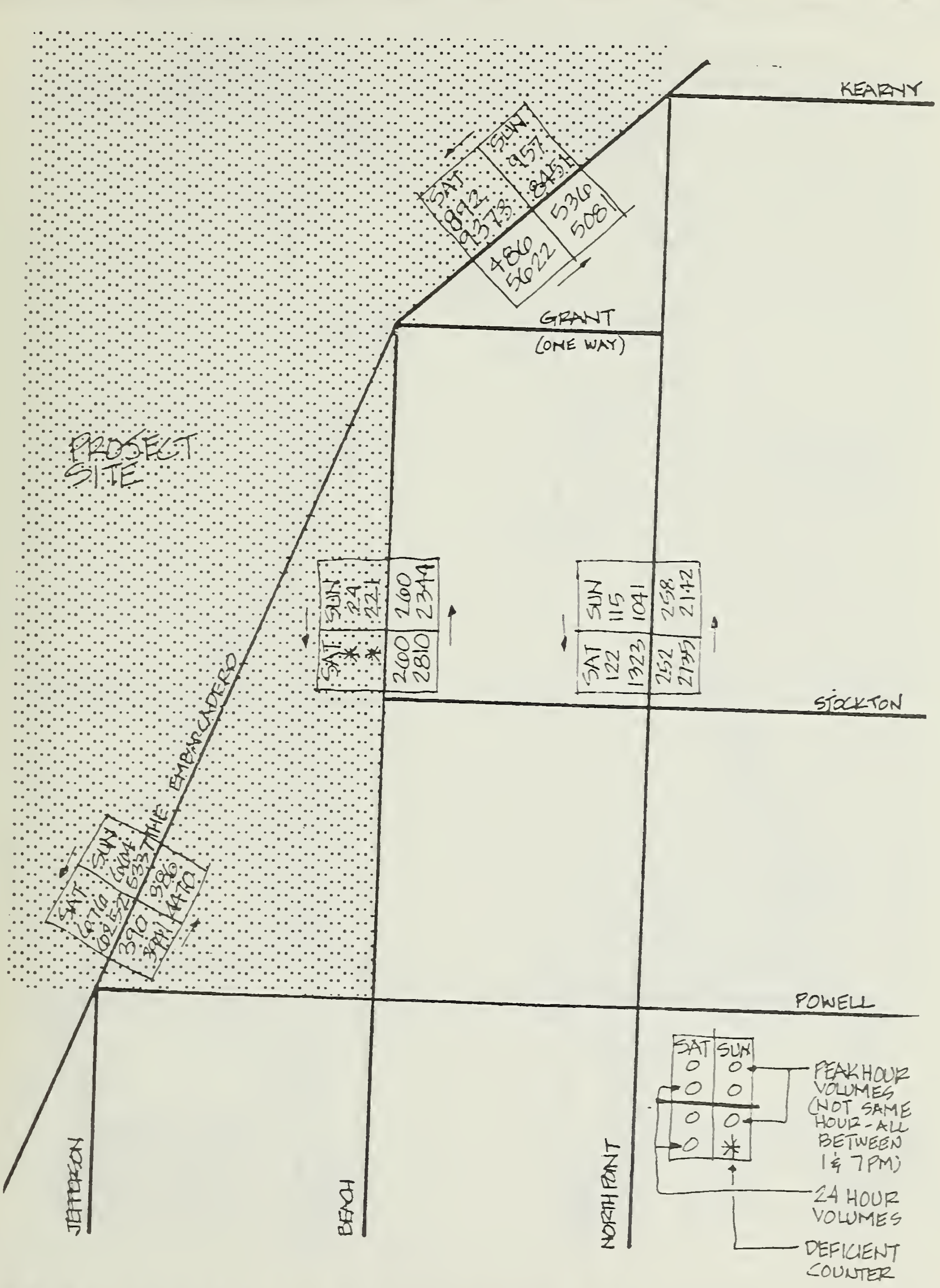
I. TRANSPORTATION SETTING

A. VEHICLE ACCESS AND TRAFFIC CIRCULATION

Primary access from the west and northwest to the project site is over North Point and Bay Streets via Marina Boulevard or Lombard Street and Van Ness Avenue. Left turns to the north are made mainly at Polk Street, Columbus Avenue and Mason Street. From the south, Columbus Avenue is used as a major access road and from the east and southeast the Embarcadero is the main access arterial. The Embarcadero/Jefferson and Van Ness and Columbus Avenues are the major arterials in the study area. North Point and Bay Streets are the two major connectors between Van Ness and the Embarcadero. The other roads act as collectors.

Exhibit F-A "Peak Hour and 24-Hour Traffic Counts" indicates peak-hour vehicle volumes near the project site and the 24-hour volumes for each direction for both Saturday and Sunday. It can be seen that in general Saturday has a higher ADT than Sunday, whereas both days have similar peak-hour volumes. Exhibits F-B and F-C show the result of manual counts that were made during specific hours at various intersections on, respectively, a Wednesday and a Saturday. It should be noted that all these traffic counts have been made in the peak summer period.

These traffic counts indicate that the critical day in terms of traffic volumes is Saturday or Sunday. Near the project site, hourly volumes on Saturday are about twice the weekday volumes.

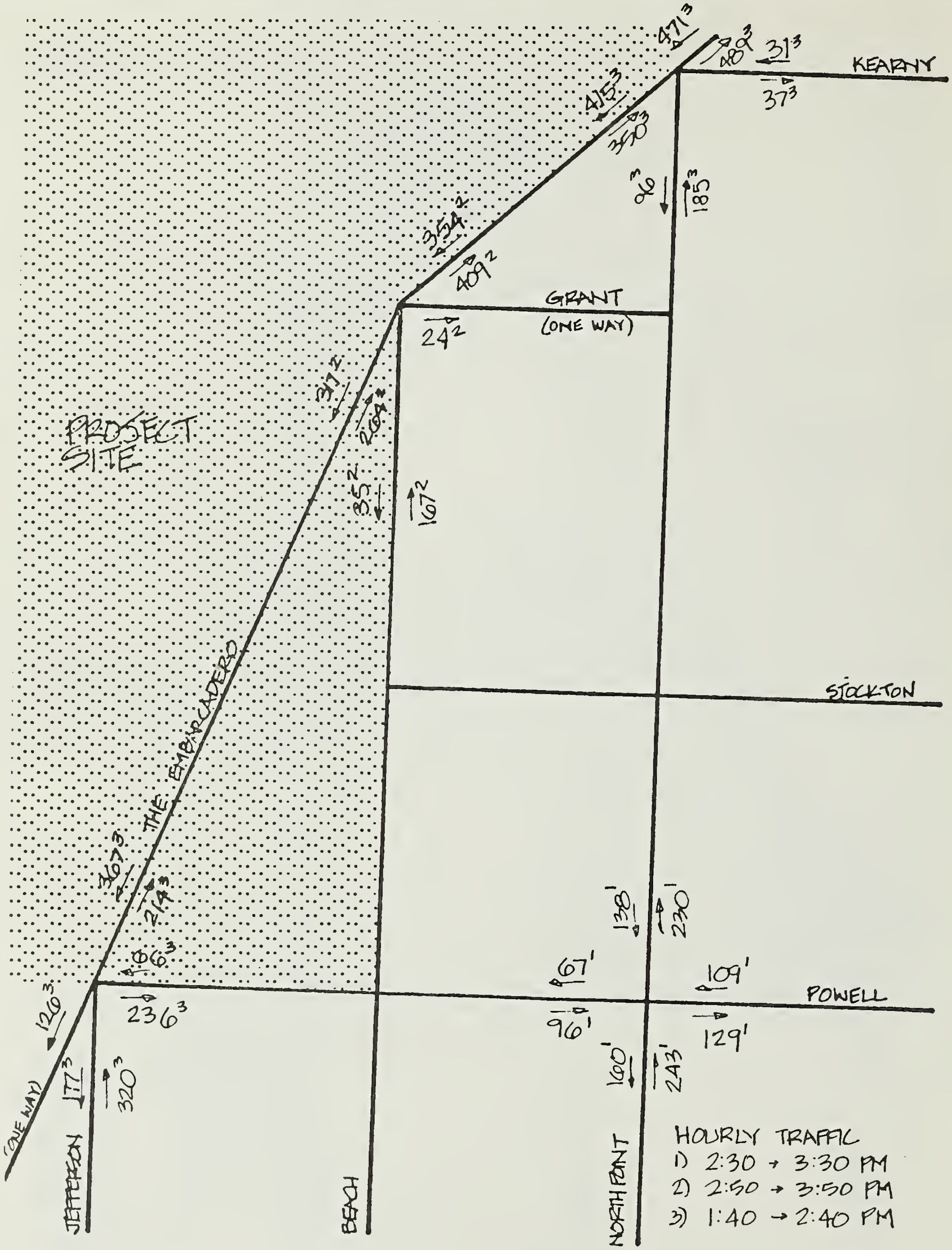


PEAK HOUR AND 24 HOUR COUNTS

Source; Automatic traffic counts made by the city of San Francisco on consecutive Saturdays and Sundays in July and August, 1975.

N

EXHIBIT F-A

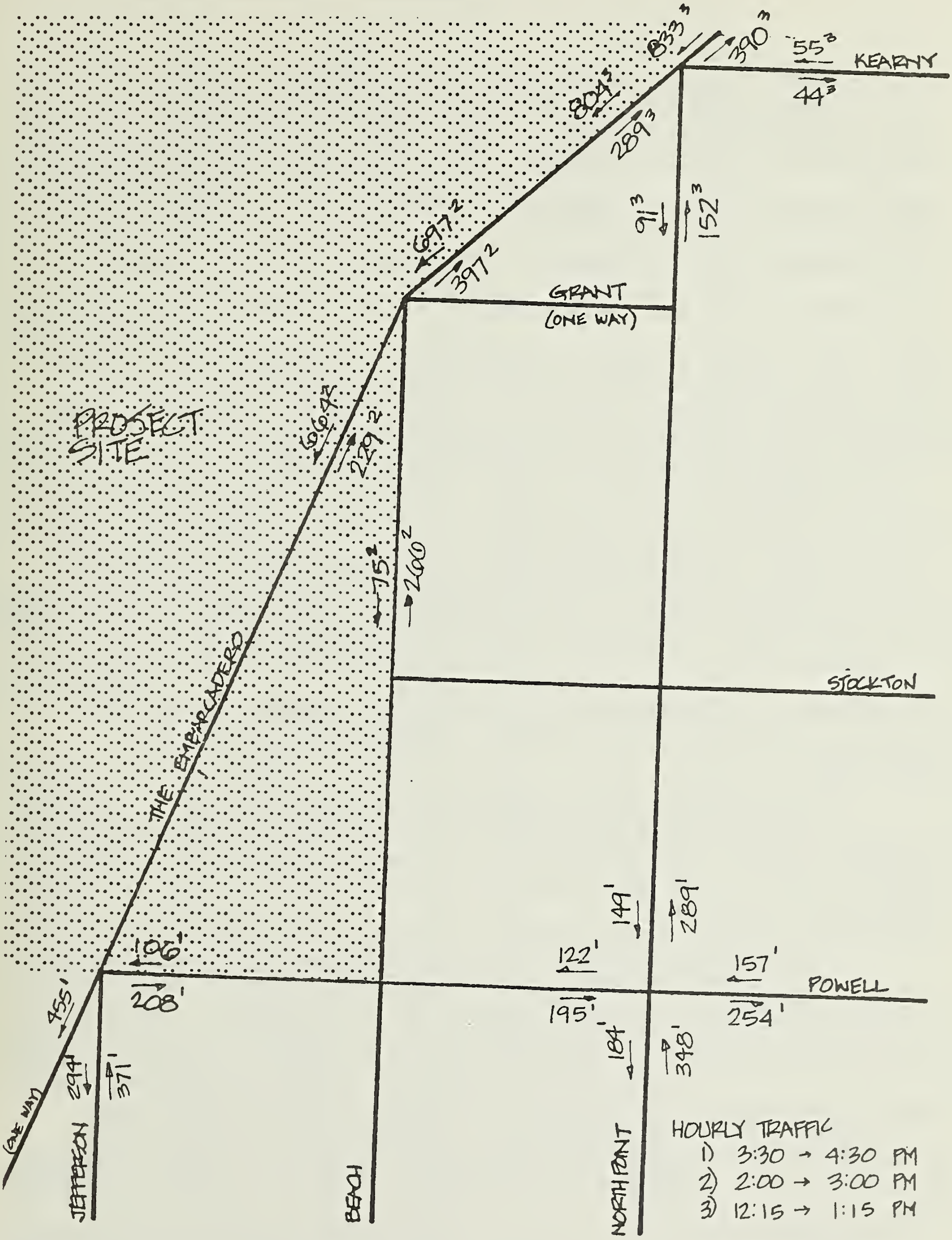


TRAFFIC COUNTS: WED., SEPT. 3, 1975

Source; Manual counts done by the City of San Francisco

N

EXHIBIT F-B



TRAFFIC COUNTS: SAT., AUG.23,1975

Source; Manual counts done by the City of San Francisco.

EXHIBIT F-C

These counts and local observations indicate that there are no major traffic problems near the project site (Embarcadero-Powell-North Point). Occasional queueing is created by conflicts with pedestrians, by maneuvering vehicles trying to park, or by the condition of the road surface, which forces drivers to slow down. The average speed on Embarcadero is limited by the many rail tracks crossing the road. The number of vehicles itself is not a major cause of the occasional queueing.

Further from the project site, two intersections were identified[1] as highly congested during peak hours: Jefferson-Taylor and Beach-Hyde. This congestion occurs only during midday to evening hours, is most severe on weekends and holidays, and is caused to a large degree by conflicts between pedestrians and vehicles.

It is difficult to indicate a specific level of service for any of the roads because of the capacity reduction caused by pedestrian conflicts.

Plans are currently under discussion to reroute Embarcadero traffic via Beach and Powell south of the project. Consideration is given to closing the Embarcadero to vehicular traffic between Powell and Grant. This would eliminate vehicle/pedestrian conflicts on the Embarcadero between Powell and Grant. Traffic would be shifted from Jefferson onto Beach Street. Even on the unclosed section of the Embarcadero, vehicle traffic would tend to be less than at present.

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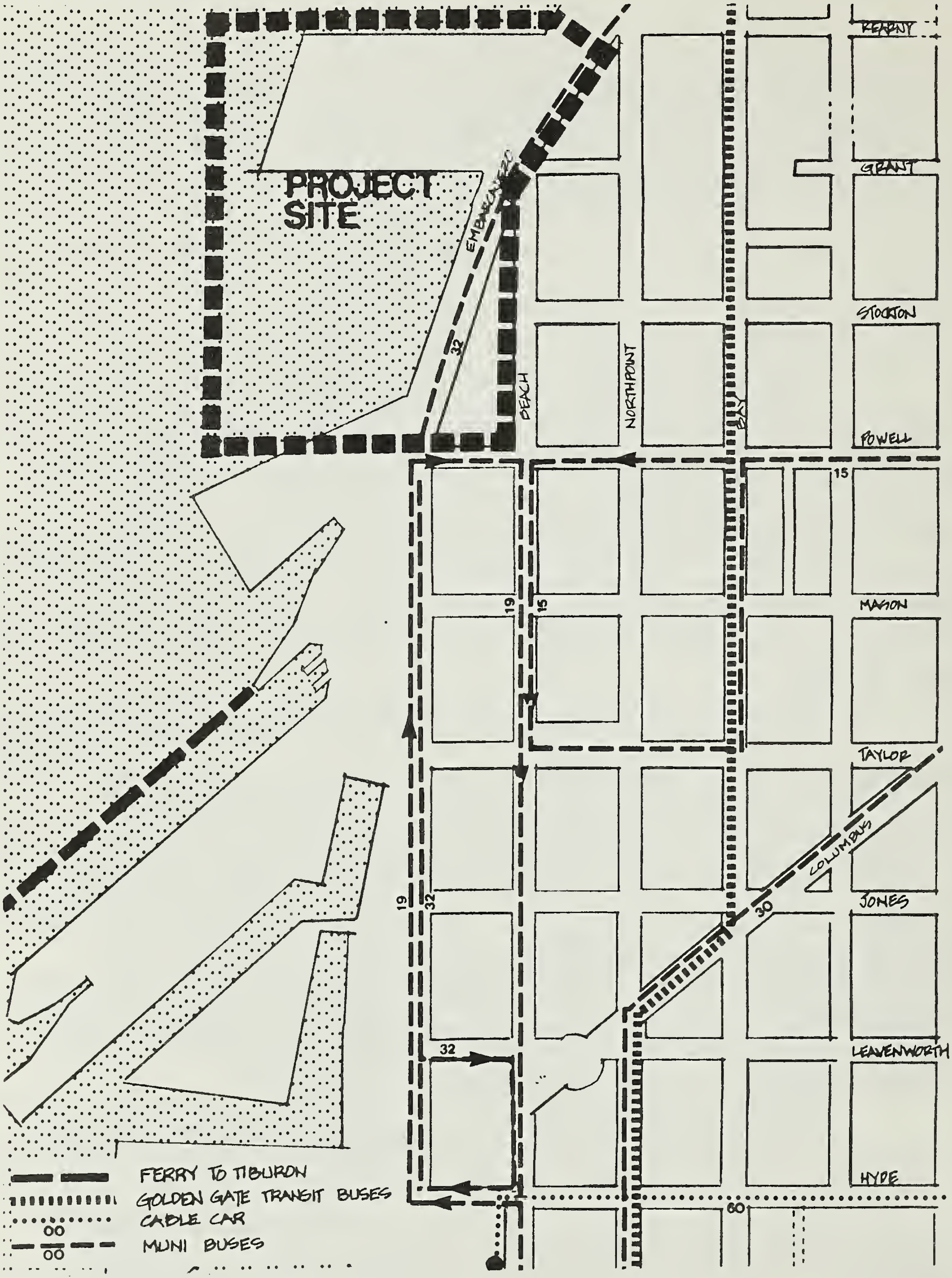
[1] Robert E. David, A study of vehicular and pedestrian traffic in the Fisherman's Wharf area, prepared for Fisherman's Wharf Merchants Association, September 18, 1973.

B. TRANSIT

Exhibit F-D shows the existing service in the study area. The San Francisco Municipal Railway operates three bus routes near the project site (32, 19, 15). Route 32 along the Embarcadero serves the project directly. A fourth bus route, along Columbus and North Point, is further away from the project. Muni also operates two cable car lines in the study area: 59 on Taylor and 60 on Hyde.

The Golden Gate Transit District provides transit service between San Francisco and North Bay. During commute hours, buses operate between the North Bay and the Financial District and are routed over Bay Street, Columbus Avenue, and North Point Street. During non-commute hours and on weekends, the Golden Gate buses operate only over the Van Ness-Civic Center-Transbay Terminal Route. The Golden Gate Transit District also operates ferry boats between the Ferry Building and Sausalito.

A second ferry service is provided by Harbor Tours to Tiburon and Angle Island. Harbor Tours operates some ferries out of the Ferry Building and some from Pier 43½ near Fisherman's Wharf.



EXISTING TRANSIT ROUTES

EXHIBIT F-D

Table F-1 shows the operating periods and headways of these different transit services. Table F-2 shows peak period riderships on the Muni routes. The ridership figures represent the passenger loads during the hourly morning and afternoon peaks at thehighest load point of each route. The ridership tends to be lower in the Wharf area.

On Saturday, September 5, and on Tuesday, September 9, 1975 (Admission Day), a survey was undertaken of the pedestrians in the Northern Waterfront area at three locations: Beach and Hyde between Ghiradelli Square and the Cannery; Jefferson and Taylor near Fisherman's Wharf; and the Embarcadero near Pier 41. A total of 115 groups representing 351 people were interviewed. The results of the survey are shown in Table F-3.

Table F-3 shows the percentage splits for the different modes of arrival to the Waterfront Area. Transit represents 36 percent of the mode of arrival, with the cable cars being used by 17 percent of the interviewed pedestrians. One percent of those interviewed arrived by ferry and 2 percent by Golden Gate buses.

Some transit improvement proposals or plans have been mentioned or discussed in other studies[1,2] but no concrete programs

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[1] John S. Bolles Associates, Northern Waterfront plan: San Francisco, 1968, p. 85.

[2] San Francisco Department of City Planning, Northern Waterfront: The Comprehensive Plan, adopted by the City Planning Commission June 19, 1969.

Table F-1 Existing Levels of Transit Service in Study Area

Transit Route	Operating Period		Service Frequencies		
	Weekday	Weekend	Weekday	Saturday	Sunday
Muni Bus #15	24 hrs. a day	24 hrs. a day	4 to 30 min.*	one bus every: 15 to 30 min.	15 to 30 min.
Muni Bus #19	5:30 am to midnight	5:30 am to midnight	10 to 15 min.	24 to 30 min.	24 to 30 min.
Muni Bus #30	5 am to midnight	5 am to midnight	6 to 12 min.	10 to 20 min.	10 to 20 min.
Muni Bus #32	5:30 am to 6 pm	5:30 am to 6 pm	8 to 15 min.	20 to 40 min.	20 to 40 min.
Taylor Cable Car #59	6 am to midnight	6 am to midnight	6 to 8 min.	6 to 9 min.	6 to 18 min.
Hyde Cable Car #60	6 am to midnight	6 am to midnight	6 to 8 min.	6 to 9 min.	6 to 18 min.
Golden Gate Buses	5:30 am to 9:30 am 3:30 pm to 6:15 pm	-- --	1 to 15 min.1/ 1 to 15 min.1/		
Golden Gate Ferry to Sausalito	7:50 am to 8:10 pm	10:25 am to 8:20 pm	1 hr. 20 min.	1 hr. 30 min.	1 hr. 30 min.
Harbor Ferry to Tiburon	7:30 am to 7:10 pm	10: am to 4 pm	1 hr. 30 min.	2 hrs.	2 hrs.

1/ All routes

* depending on operating period

Table F-3

PEAK-HOUR RIDERSHIP ON MUNI ROUTES

Route #	A.M. Peak Time a.m.	 Hourly Ridership Peak Direction	P.M. Peak Time p.m.	 Hourly Ridership Peak Direction
15-Third	7:00-8:00	629	5:00-6:00	431
19-Polk	7:30-8:30	427	4:30-5:30	659
30-Stockton	7:30-8:30	1,803	5:00-6:00	1,869
32-Embarcadero	7:30-8:30	625	4:30-5:30	799
59-Powell & Mason	7:00-8:00	233	6:30-7:30	751
60-Powell & Hyde	11:00-12:00	251	3:30-4:30	620

Source: Annual Report, Traffic Checks 1st. July to 30th June, 1975. MUNI

Table F-1 Mode of Travel to Waterfront

	Location			
	Beach/Hyde (N=110)	Jefferson/Taylor (N=146)	Pier 41 N=(95)	Total (N=351)
By Muni Bus	3%	7%	7%	6%
Cable Car	21%	13%	17%	17%
Tour Bus	-	23%	3%	11%
Ferries, Golden Gate Buses	-	7%	-	3%
Total Transit	24%	50%	27%	36%
Auto	46%	41%	64%	48%
Walk	22%	9%	9%	13%
Other (Taxi,Bike)	8%	-	-	2%

have been developed nor has any funding mechanism been established. The proposed improvements specifically include establishment of a local intra-bus system within the area itself, provision of an Embarcadero rail system, extension of the Powell Street cable car from Bay Street to Fisherman's Wharf Plaza, and rerouting existing Muni lines to improve bus service to and within the Wharf area.

C. PARKING CONDITIONS

Near the project site, perpendicular on-street parking is provided along the Embarcadero. These parking spaces are used by people visiting the Fisherman's Wharf and on weekdays by employees of the San Francisco Port and other local employees.

A survey of the parking facilities in the Fisherman's Wharf Area was recently conducted by the City of San Francisco to determine the occupancy rates and turnover rates of the different parking types on a weekend and a weekday.[1] Preliminary observations indicated the following trends:

- On-street parking had a very high occupancy rate on the weekend and a high occupany rate on the weekday. It can be assumed that with increasing distance from Fisherman's Wharf along the Embarcadero the occupany rate decreased rapidly beyond Pier 41.

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[1] San Francisco Department of Public Works and City Planning, survey made on the weekend after Labor Day and on a weekday during the same week.

- The parking lots have relatively high occupany rates. Some of then such as the one at the Cannery, were heavily utilized. The lot on Beach Street between Jones and Taylor was only about 25 percent full on both the weekend and the weekday.
- Among three parking garages surveyed, only the Ghirardelli parking had a high occupancy rate. The other two garages (Cannery and 360 Beach) were less than half filled on both days. The Ghirardelli parking garage has a high occupancy rate in spite of its high parking rates, probably because of the special focus of Ghirardelli Square.

The study of vehicular and pedestrian traffic in the Fisherman's Wharf area prepared for the Merchants' Association (David, 1973) basically states that the parking supply in the Northern Waterfront Area is a problem at peak periods. At low visitor hours and days (most of the weekdays) parking is sufficient or abundant. Even on-street parking, which is at a premium during the peak periods, meets the demand at those hours.

Park of the problem seems to be the high costs of off-street parking. Many visitors interviewed during the survey complained about the high cost of parking in a garage or in a lot. Many people seem to prefer driving around for a moment to try to find an on-street parking space or parking further away rather than parking in a more expensive garage or lot.

Table F-4 shows the percentage splits between the different parking types resulting from the survey. Most people left their cars in on-street spaces. These percentages apply to 48 percent of all the visitors who came to the study area.

The Northern Waterfront Plan prepared for the City and County of San Francisco recommended the establishment of a peripheral parking system with the major parking garages constructed through public action. This study and Northern Waterfront Element of the Comprehensive do not recommend building parking garages north of Beach Street.

D. PEDESTRIAN CIRCULATION

Thirteen percent of the people interviewed during the survey responded that they walked directly from their home, hotel/motel, or place of overnight stay to the study area. The survey also showed that many people walked relatively long distances between their mode of arrival and destination. These elements, in addition to the mall-type shopping and restaurant facilities in the area (Cannery, Ghirardelli, Wharf Restaurants, street vendors), create high volumes of pedestrians. The high density of pedestrian movements is a major cause of the vehicle congestion and queueing in the study area. Pedestrian movements conflict with vehicles trying to turn or to enter or leave a garage or parking lot. The study of vehicular and pedestrian traffic in the Fisherman's Wharf area (Summary Report. p. 3) states "that congestion is limited to a few afternoon hours, that it is directly proportional to the number of pedestrians in the area." The streets with the highest pedestrian densities are:

- Jefferson Street
- Taylor Street from the Wharf to Bay Street
- The Embarcadero from the Wharf to Pier 43
- Beach Street between Polk and Leavenworth

Table F-4 Types of Parking

	Location			
	Beach/Hyde (N=51)	Jefferson/Taylor (N=59)	Pier 41 (N=60)	Total (N=170)
On-Street	49%	44%	43%	45%
Lot	27%	49%	47%	42%
Garage	16%	7%	10%	11%
Drop-Off	8%	-	-	2%

When the pedestrian movements get too crowded on these streets, pedestrians conflict with each other start walking on the street, and violate the signal system, thus hampering vehicular traffic.

On the other hand, the ability to visit the area on foot is a major element of the attractiveness of Fisherman's Wharf. It gives the area a human dimension that attracts many visitors. The merchants also welcome the high pedestrian densities and volumes, relating them to sales volumes.

Along the project site itself, pedestrian volumes are very low, even at peak seasonal hours.

The Northern Waterfront Plan makes the following recommendations regarding pedestrian circulation:[1]

> The proposed ciruclation and parking system for Sub-Area 1[2] virtually reserves the shoreline for pedestrians and proposes that major vehicular movement and parking be concentrated along inland corridors peripheral to the area. At the present time, intense pedestrian movement occurs in the central and western districts during periods of peak tourist activity. Moreover, the amount of future development programmed by the Land Use Plan insures that pedestrian movement will increase in the future to many times the present volume. Therefore, the plan provides that as one approaches the water, automobile traffic decreases and pedestrian traffic increases. Jefferson Street should be re-designed to provide a continuous pedestrian-oriented pathway connecting all activity districts along the shoreline. Taylor Street should be designed as a major pedestrian way connecting Columbus Avenue and Fisherman's Wharf Plaza. Pedestrian routes from parking garages should converge upon Aquatic Park, Fisherman's Wharf Plaza, and North Point Park. New developments on Hyde Street Pier, Fish Alley, Pier 45, and Pier 43 should all provide sufficient internal pedestrian circulation and these internal paths should be connected

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[1] John S. Bolles Associates, 1968, pp. 81, 83.

[2] Fisherman's Wharf area to Pier 37.

to major pedestrian routes. Development of continuous ground-floor activities should be encouraged along the south side of Jefferson Street, vehicular access to abutting uses should be prohibited, but access to interior pedestrian ways should be provided.

E. RAILROAD/FREIGHT FACILITIES

Railroad facilities were originally developed in the Northern Waterfront area to serve Port activity, the industries, and warehouses. Rail tracks are located all along the Embarcadero serving the piers, along Jefferson Street through the Aquatic Park to the Presidio, and along North Point and Beach Streets. The importance of rail service has greatly diminished as a result of changing land use patterns and relocation of port activities. A limited number of industries and institutions now use the tracks.

The railroad tracks along the Embarcadero and Jefferson currently serve the U.S. Army at the Presidio and Piers 45 and 43. The tracks are under public ownership and are controlled by the Port Commission. San Franciso Port Railroads, Inc., have the right of use for the tracks and undertake an average of about six switching operations per day, mostly between 6 a.m. and 12 noon.[1]

On the triangular block surrounded by Powell Street, Beach Street, and the Embarcadero there is a rail storage yard serving Pier 43.

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[1] Mr. Cecil of San Francisco Port Railroads Inc., telephone conversation, October 22, 1975.

Minor track improvements are planned to be undertaken very soon along Jefferson Street.

No definite plans are known for the future operation and existence of the tracks. This will depend on the future development of the waterfront and will be decided by the Port Commission. The Federal Government requires that one set of tracks remain along the Embarcadero and Jefferson to serve the Presidio.

II. TRANSPORTATION IMPACTS

A. TRAVEL GENERATION

The transportation impact assessment of the proposed project is complicated because of the little-known travel behavior in this area and because of the complex effects of the project on the existing travel pattern. A survey was undertaken to obtain a better understanding of these problems by determining the travel patterns, transportation modes, origins and destinations, and duration of the stay of the visitors. Most of the visitors go to several locations and establishments and many who would visit the project would not go specifically to that facility, but rather to the Wharf area, and would go there even if the project were not implemented. Many visitors to the project would also be diverted from existing facilities at the Wharf area. Two types of travel generation are therefore distinguished:

1. Visitors attracted to the project itself (i.e., to the different facilities of the project).
2. Additional visitors attracted to the Fisherman's Wharf area as a consequence of implementation of the proposed project.

Based on the visitor and employee attraction rates developed for the project (see Table F-5), the number of persons attracted to the project itself has been determined in Table F-6 for each use. These figures represent the estimated number of people that would come to the project on a busy Friday and Saturday during the summer

TABLE F-5

Assumed Visitor and Employee Attraction Rates During the Tourist Season[1]

Facility	Daily Visitors or Employees on a Summer Friday	Daily Visitors or Employees on a Summer Saturday
Retail shops	80/1,000 sq.ft.GFA[2]	120/1,000 sq.ft.GFA
Restaurant	235/1,000 sq.ft.GFA[3]	210/1,000 sq.ft.GFA[3]
Sport fishing	15/berth	36/berth
Small boat marina	1/berth	2.5/berth

[1] Attraction rates for people arriving by auto or transit only. Pedestrians and bicycles are not included.

[2] GFA = gross floor area.

[3] Based on 0.70 usable space, 15 square feet per seat, and an average turnover rate of 5.0 on Fridays and 4.5 on Saturdays. (The developer estimates that the daily turnover rate in his proposed restaurant will be 6.0 on Fridays and 4.5 on Saturdays.)

TABLE F-6

People Attracted to the Project on Friday and Saturday During the Tourist Season

Facility	Size (Gross Floor Area) or Units	Summer Friday[1]	Summer Saturday[1]
Retail shops	67,000 sq. feet	5,360	8,040
Restaurant	133,000 sq. feet	31,255	27,930
Sport fishing	50 berths	750	1,800
Small boat marina	250 berths	250	625
Total		37,615	38,395

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[1] People going to the Waterfront area by car or transit only. People walking or bicycling to the waterfront area, estimated at an additional 15 percent, are not included.

to visit, shop, eat, fish, sail, or work. It can be seen that the higher number of visitors on Friday is due mainly to the higher usage of the restaurants on that day. Based on information received from the developer, Saturday lunchtime is lighter than Friday lunchtime. The developer's goal is to attract restaurants into his project that appeal more to local people than to tourists. This would mean that the project restaurants would have a lower seasonal peak, would attract more people on Fridays than on Saturdays, and would not compete too much with the tourist-oriented restaurants. The restaurants at Fisherman's Wharf have their busiest period during Friday and Saturday dinnertime and the second busiest period at Saturday lunchtime.

During non-summer months and on other weekdays during the summer, fewer people visit the Wharf area.

All there people would come by car or by public transit from their origin (home, hotel, motel, etc.) to the Fisherman's Wharf area. Those who would walk or bicycle to the area would be in addition to the indicated number of visitors or employees.

As indicated earlier, people attracted to the project would not all constitute additional visitors to the Wharf area. Most visitors visit many different locations and facilities all over Fisherman's Wharf, as has been shown by the survey undertaken by AMV (see Table F-7). This pattern can also be expected to some degree for the proposed project. This means that the traffic impact and parking demand generated by a visitor going to one facility cannot be totally allocated to that facility, but must be allocated proportionately to the number of facilities visited.

Table F-7 General Survey Results

	Survey Location			
	Beach/Hyde	Jefferson/Taylor	Pier 41	Total
No. of Groups Surveyed	43	38	34	115
No. of Persons	110	146	95	351
Avg. No. of Persons in Group	2.6	3.8	2.8	3.0
Avg. No. of Establishments Visited	(N=110) 8	(N=146) 10	(N=95) 6	(N=351) 8
Avg. Length of Visit (Hours)	3 hrs. 15 min.	4 hrs.	2 hrs. 45 min.	3 hrs. 30 min.
Purpose of Trip:	(N=138)	(N=232)	(N=137)	(N-507)
General Touring	49%	58%	53%	54%
Shopping	25%	13%	3%	14%
Restaurant	7%	16%	23%	16%
Other	19%	10%	21%	15%
No Response	-	3%	-	1%

TABLE F-8

Additional People Attracted to the Wharf Area on a Summer Friday

Purpose Facility	Employees & Visitors to Project Itself a	Prime Purpose Factor b	Ratio Additional Visitors c	Additional People to Wharf Area d[2]
Retail shops	5,360	0.50	0.85	2,278
Restaurant	31,255	0.80	0.80	20,003
Sport fishing	750	0.95	0.60	428
Small boat mar.	250	0.95	1.00	238
Total	37,615	0.61		22,947

TABLE F-9

Additional People Attracted to the Wharf Area on a Summer Saturday

Purpose Facility	Employees & Visitors to Project Itself a	Prime Purpose Factor b	Ratio Additional Visitors c	Additional People to Wharf Area d[2]
Retail shop	8,040	0.45	0.85	3,075
Restaurant	27,930	0.70	0.80	15,641
Sport fishing	1,800	0.90	0.60	972
Small boat mar.	625	0.95	1.00	594
Total	38,395	0.52		20,282

[1] During non-summer months and on other summer weekdays there will be 10 to 40 percent fewer visitors.

[2] $d = a \times b \times c$

In many cases, one facility has to be considered as a principal purpose for that visit and the other facilities or establishments are secondary. If, for instance, a person or a group goes sport fishing and after that visits a nearby shop, sport fishing is considered a more important or even a major purpose and must receive more weight in terms of its traffic impact and parking need than the shop. These considerations will be reflected in the prime purpose factor indicated in Table -8.

A prime purpose factor of 0.15, for instance, means that 15 percent of the visitors to that facility go there with the specific purpose of visiting that one facility. It can also be interpreted that, on the average, the visitors to that facility visit 100/15 = 6.67 facilities, so that only 15 percent of the visitors to one facility generate a real demand. The prime purpose factor is one of two factors used to determine the additional visitors to the Fisherman's Wharf area on the basis of visitors attracted to the project itself.

The other factor is the ratio of additional visitors which reflects the fact that many people visiting the proposed project would go to the Fisherman's Wharf area whether or not the project were implemented; some of them probably go there now. This factor considers the possibility that the proposed project would not only attract more people to Fisherman's Wharf, but would also divert people from existing facilities. The project would compete with all other facilities to attract clients. People who are merely shifted from one facility within the study area to another will not generate an additional travel impact and parking demand. This is especially the case for the sport fishing boats, which are estimated to have a ratio of additional visitors of 0.60. This means that 40 percent of the visitors to the sport fishing boats in the project would be diverted from the existing boats in Fisherman's Wharf and would not be replaced there, and that the remaining 60 percent would be additional (new) visitors to the study area.

Both the prime purpose factor and the ratio of additional visitors were determined on the basis of information received from the survey and the best available knowledge and understanding of the project and study area.

Tables -8 and -9 indicate additional people attracted to the Wharf area as a result of the proposed project on a Friday and on a Saturday. As can be seen, some of the prime purpose factors vary by day, since on Fridays the visitors tend to originate more from San Francisco with a specific purpose or destination in mind.

To assess the impacts of this additional travel to the Wharf area on the vehicular traffic and the transit system, the additional visitors are assigned to the two modes according to the purpose of travel, the day of travel, and the level of future transit improvement.

Two levels of transit improvements have been assumed:

Alternative A: Moderately improved transit service
Alternative B: Significantly improved transit service

Moderately improved transit consists basically of an internal shuttle bus within the Northern Waterfront area from Aquatic Park to the Ferry Terminal. Significantly improved transit assumes the extension of the Mason/Taylor cable car line to the waterfront and improved bus or new rail service between Van Ness Avenue and the Embarcadero BART Station, connecting with the new Golden Gate Ferry Terminal at the Ferry Building and the Southern Pacific Terminal south of Market.

Based on the survey results, modal splits and average car occupancies have been used to estimate the number of additional vehicles and transit riders attracted to the Wharf area for each alternative, and for a summer Friday and Saturday (see Tables F-10 and F-11). It can be seen that restaurants are the highest travel generators if all the uses, especially on Friday. This is due to the high proportion of restaurants proposed in the project, their high trip-generator type, and their appeal to a local clientele, so that they represent a specific travel purpose.

The travel generation and subsequent traffic impacts represent averages for Fridays and Saturdays during the summer season (June-September).

TABLE F-10

Additional Vehicles and Transit Riders to the Wharf Area on a Summer Friday Generated by the Proposed Project

Purpose Facility	Additional Riders To Wharf Area d	% By Car Alt. A e_A	% By Car Alt. B e_B	Average Car Occupancy f	Additional Vehicles To Wharf Area g_A 1/	Additional Vehicles To Wharf Area g_B 2/	Additional Transit Riders to Wharf h_A 3/	Additional Transit Riders to Wharf h_B 4/
Retail, Shop	2,278	60	45	3.50	391	293	911	1,253
Restaurant	20,003	70	55	3.50	4,001	3,143	6,000	9,001
Sport fishing	428	80	75	3.00	114	107	86	107
Small boat marina	238	80	75	2.50	76	71	48	60
Total	22,947				4,582	3,614	7,045	10,421

[1] $g_A = d \times e_A/100 \times f$

[2] $g_B = d \times e_B/100 \times f$

[3] $h_A = d \times (100-e_A)/100$

[4] $h_B = d \times (100-e_B)/100$

TABLE F-11

Additional Vehicles and Transit Riders to the Wharf Area on a Summer Saturday Generated by the Proposed Project

Purpose Facility	Additional Riders to Wharf Area d	% By Car Alt. A e A	% By Car Alt. B e B	Average Car Occupancy f	Additional Vehicles to Wharf Area g A	Additional Vehicles to Wharf Area g B	Additional Transit Riders to Wharf h A	Additional Transit Riders to Wharf h B
Retail, Shop	3,075	60	45	3.50	527	395	1,230	1,691
Restuarant	15,641	65	50	3.50	2,905	2,234	5,474	7,821
Sport fishing	972	80	75	3.00	250	243	194	243
Small boat marina	594	80	75	2.50	190	178	119	148
Total	20,282				3,881	3,050	7,017	9,903

B. TRAFFIC IMPACT

1. General

The traffic impact of the proposed project would amount to an additional 9.164 vehicle trips on an average Friday and an additional 7.762 on an average Saturday (assuming the least favorable transit level). With the better transit level, the traffic impact would be about 20 percent lower.

These additional vehicle trips attracted to the Wharf area represent one-way trips entering and leaving the area in one day. They would be distributed over the following access roads to the study area (assuming a screenline parallel to and between North Point and Bay Streets from the Waterfront to Van Ness):

- The Embarcadero
- Stockton Street
- Powell Street
- Mason Street
- Taylor Street
- Jones Street
- Columbus Avenue
- Leavenworth Street
- Hyde Street
- Polk Street
- North Point Street
- Bay Street

The specific assignments within the study area are very complex and would depend on the future area-wide circulation pattern, traffic regulations, location of parking supply, and parking regulations. Not all vehicles attracted to the project would necessarily park in the proposed garage. Those parked somewhere else would be replaced in the proposed garage by vehicles generated by other facilities, however, so that it is safe to assume that the indicated number of additional vehicle trips would be attracted to the proposed parking facility. The most critical streets in terms of traffic impact would be:

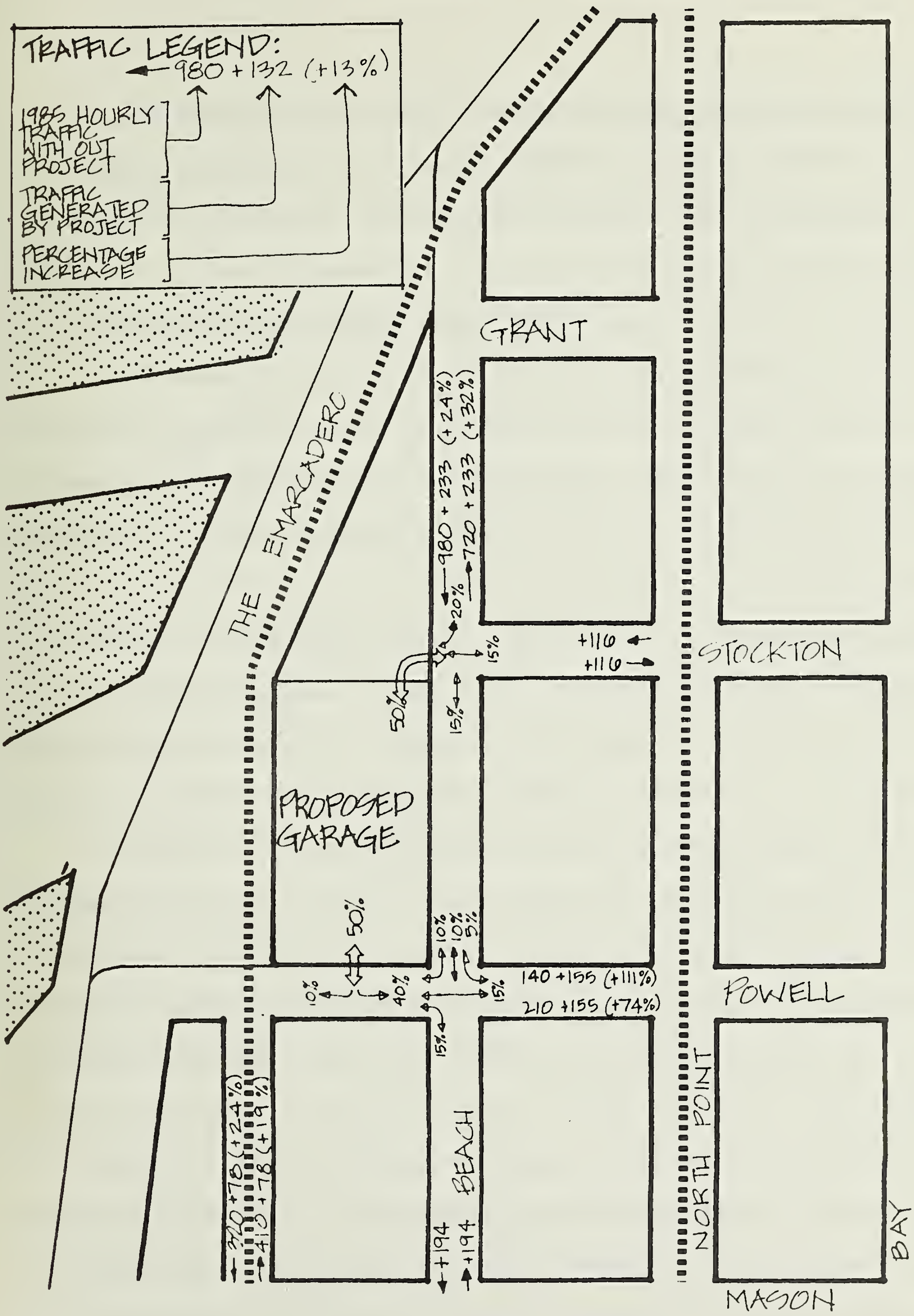
Jefferson between Powell and Mason
Beach between Powell and Mason
Powell between Beach and North Point
Stockton between Beach and North Point
Beach between Stockton and Grant

For the purposes of this study, it is assumed that the Embarcadero will be closed to vehicular traffic between Powell and Beach.

The traffic increase relative to present volumes would be most important on Fridays; however, on Saturdays the traffic increase would be most critical since the present volumes are about twice as high as on weekdays. The impact would also be more significant on Saturdays because of the higher pedestrian densities.

At the maximum, 10 percent of the daily additional vehicle volumes are estimated to drive at the peak hour in the peak direction. An additional 776 vehicle trips would thus be generated by the proposed project in the peak hour/peak direction on an average Saturday. It is assumed that the Embarcadero traffic will use Beach and Powell.

Exhibit F-E shows the 1985 hourly traffic volumes estimated on the basis of the existing traffic data and on an average 1 percent annual increase. The indicated percentage distribution of the traffic assignments assumes one access point to the parking facility from the Beach-Stockton intersection and one access point from Powell Street. A maximum of 30 percent of the additional hourly traffic (233 vehicles) is assigned to Beach Street east of Stockton, 20 percent (155 vehicles) is assigned to Powell Street south of Beach, and 10 percent (78 vehicles) is assigned to Jefferson west of Powell. It is also assumed that Beach Street will be a two-way street.



TRAFFIC IMPACT

EXHIBIT F-E

Two hundred thirty-three additional vehicles in each direction on Beach Street represent a 24 to 32 percent hourly traffic increase on that street. The 24-hour increase in both directions would be 2330 vehicles, an increase of about 14 percent over the 1985 average daily traffic (ADT) (16,500) forecast. Two lanes in each direction will be required with or without the project on Beach Street. These additional hourly volumes would aggravate congestion at the intersections along Beach Street and hamper their operation. Similar impacts can be expected on Beach west of Powell.

The magnitude of the hourly traffic increase on Powell would be high, 74 to 111 percent. The total hourly volumes in each direction, however, would be less than 370 vehicles and below the capacity of the street and the intersections at Beach and North Point. The future level of service would depend on pedestrian conflicts, on-street parking conditions, and bus activity around the bus depot between Powell, Beach, Stockton, and North Point.

The traffic increase on Stockton would be similar to that on Powell. No data on existing traffic are known for this section of Stockton.

Jefferson Street would carry an additional 78 vehicles per hour per direction representing an increase of 19 to 24 percent. This impact would be significant, however, because of the high congestion at Jefferson and Taylor and the very high pedestrian activities along Jefferson Street.

Generally the traffic impact of the proposed project would be significant only at the peak visitor periods, when the pedestrian densities are high and the road capacities are reduced.

2. Comparison to No-Build Alternative

The foregoing analysis is based on the assumption that Embarcadero traffic will be diverted via Beach and Powell, independent of implementation of the proposed project. It is likely, however, that the Embarcadero would not be closed and its traffic would not be diverted via Beach and Powell if the project were not implemented. In that case, the 1985 hourly volumes on Beach would be about 100 vehicles westbound and 300 eastbound. The 1985 ADT would be between 3,400 and 5,200 vehicles, and two lanes (one in each direction) would be sufficient.

If it is assumed that the Embarcadero would be diverted only if the project were implemented, the traffic impact on Beach Street and Powell Street (between Beach and Jefferson) would be of much higher magnitude and significance. The 1985 ADT would increase from the estimated 3,400 to 5,200 to an ADT of 16,100 to 17,800 vehicles. The 1985 hourly volumes would be increased from about 100 vehicles westbound to about 1,210, and from about 300 vehicles eastbound to 950. This scenario would thus have significant traffic impacts, requiring the addition of a traffic lane in each direction and signalizing intersections on Stockton, Powell, and Mason.

3. Impacts if the Embarcadero Remains Open

If the Embarcadero remains open and the proposed project is implemented, it can be estimated that only about half of the 233 additional hourly vehicles that would be generated on Beach Street with a closed Embarcadero would be added to the Beach Street traffic. The other half, 117 vehicles per direction per hours, would be added on the Embarcadero.

The 1985 hourly volumes on Beach Street would thus increase from about 100 westbound vehicles to about 220 vehicles, an increase of 120 percent. Hourly eastbound traffic would increase from about 300 vehicles to 420, a 400 percent increase. These percentage increases are high. They are not significant, however, since Beach Street traffic would be below its capacity. One lane in each direction will be sufficient to handle the additional traffic if the Embarcadero remains open.

On the Embarcadero, hourly traffic would increase from 880 westbound vehicles to about 1,000 vehicles and from about 420 eastbound vehicles to about 520. These traffic increases are moderate and do not constitute a significant impact, except possibly at a few peak visitor hours, when pedestrian densities are high.

Leaving the Embarcadero open would reduce the traffic impact on Beach Street and would not require its widening to four traffic lanes. Many pedestrians who would park their cars in the proposed garage or work in the proposed project area would have to cross the Embarcadero to get to the piers. This increased pedestrian crossing would impede the vehicle flow on the Embarcadero and would constitute an additional safety hazard for the pedestrians.

A covered wooden pedestrian bridge connecting the garage to the commercial recreation area on Pier 39 would eliminate any conflict between vehicle flow on the Embarcadero and pedestrian crossings.

If the Planning Commission were to close the Embarcadero to vehicles, the pedestrian bridge would not be necessary.

If the Embarcadero were narrowed to two lanes westbound, eastbound traffic would be diverted onto Beach Street. The traffic impact in terms of additional vehicle volumes on Beach Street would be about half the impact if the Embarcadero were fully closed. Two lanes eastbound on Beach Street would probably be required.

C. TRANSIT IMPACT

Transit ridership would increase as a result of the increased travel demand. This would increase the fare box revenue, which covers about 1/3 of the operating costs. It has been estimated that (assuming the least favorable modal split level) the additional transit trips would amount to about 14,000 per day.

Operating costs would also tend to increase, especially if the increased transit ridership necessitated additional transit service. This might be the case for the Mason/Taylor cable car line, especially if it were extended to the Wharf area itself. This transit system is currently overloaded. On peak visitor days, visitors wait in long lines to get on the cable car. Additional cars on the two cable car lines would increase capital and operating costs significantly.

Certain existing bus lines would have to be relocated to serve the proposed project adequately. Minor reroutings of bus loops 15, 19, 32, and 42 improving transit service to the proposed project, are under study by the Municipal Railroad and the San Francisco Department of City Planning.

Tables F-10 and F-11 also indicate the impacts that improvements in transit service would have on the number of vehicles attracted to the Wharf area. The traffic decrease would be about 20 percent for the significantly improved transit level.

Despite its additional costs, improved transit service has the marked social and environmental advantages of providing an improved level of service to transit-dependent persons and of providing a better alternative to the use of the automobile. Auto congestion, air pollution, and parking demand are reduced.

D. PARKING IMPACT

1. General

The additional parking demand generated by the proposed project is estimated on the basis of the additional vehicles attracted by each facility of the project to the Wharf area, as determined in Section II.A. The standard procedure for estimating the parking need, consisting of assigning a standard parking space rate to each use, cannot be directly applied in this case because each additional facility does not generate the same additional proportion of parking demand.

The parking demand was analyzed for a summer Friday and Saturday at noon and in the evenings. The percentage of the daily additional vehicles attracted by the project to the Wharf area that would be parked at those periods was estimated on the basis of existing information and is indicated in Tables -12 and -13. The required parking spaces were thus determined for each use, for each alternative level of transit service, and for the noon and evening periods of a summer Friday and a summer Saturday.

The highest parking need would be on Fridays: 1,183 spaces (including the 150 spaces for Harbor Tug and Barge Company) would be needed at noon assuming a moderately improved level of transit service; 1,079 spaces would be needed in the evening, not counting spaces for Harbor Tug and Barge Company. Most of the parking need would be generated by the restaurants.

The better level of transit service, i.e., the significantly improved service, would decrease the parking need by about 20 percent.

On Saturdays at noontime the parking demand generated by the proposed project would be 1,093 spaces (including the 150 spaces for Harbor Tug and Barge Company). About 36 percent of the parking demand would be generated by sportfishing and the small boat marina.

TABLE F-12

Parking Need Generated By the Proposed Project On a Summer Friday[1]

	Additional Vehicles to Wharf Area		Parking Need from Noon to 1 p.m.			Parking Need from 7 p.m. to 8 p.m.		
			Percent	Spaces		Percent	Spaces	
Facility	Alt. A	Alt. B	Parking	Alt. A	Alt. B	Parking	Alt. A.	Alt. B
Retail shop	391	293	25	98	73	5	20	15
Restaurant	4,001	3,143	20	800	629	26	1,040	817
Sport fishing	114	107	85[2]	97	91	10	11	11
Sm. boat mar.	76	71	50	38	36	10	8	7
Total	4,582	3,614		1,033	829		1,079	850
Plus the 150 spaces for Harbor Tug and Barge Company				1,183	979			

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[1] During non-summer months parking demand is about 5 to 15 percent less in the evening and about 20 to 30 percent less at noon time.

[2] Based on the fact that a few people will go sport fishing in the afternoon.

TABLE F-13

Parking Need Generated By the Proposed Project On a Summer Saturday[1]

	Additional Vehicles To Wharf Area		Parking Need from Noon to 1 p.m.			Parking Need from 7 p.m. to 8 p.m.		
			Percent	Spaces		Percent	Spaces	
Facility	Alt. A	Alt. B	Parking	Alt. A	Alt. B	Parking	Alt. A.	Alt. B.
Retail shop	527	395	20	105	79	5	26	20
Restaurant	2,905	2,234	17	494	380	26	755	581
Sport fishing	259	243	85	220	207	10	26	24
Sm. boat mar.	190	178	65	124	116	10	19	18
Total	3,881	3,050		943	782		826	643
Plus the 150 spaces for Harbor Tug and Barge Company				1,093	932			

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[1] During Winter months parking demand is about 10 to 20 percent less in the evening and 30 to 45 percent less at noon time.

The estimated peak parking demand represents about 22.5 percent of the daily number of additional vehicles attracted to the project on a summer Friday, or 24.3 percent of the daily additional vehicles attracted on a summer Saturday.

The developer is required by his contract with the Port Commission to provide 150 parking spaces to Harbor Tug and Barge Company.

2. Parking Spaces Provided

One thousand parking spaces are proposed for the project. Subtracting the 150 spaces reserved for the Harbor Tug and Barge Company, 850 spaces would be available to satisfy the additional demand generated by the proposed project. This represents 183 fewer spaces than the maximum that are needed at noon on Friday and 93 fewer that are needed at noon on Saturday, assuming a moderately improved transit service.

With provision of fewer parking spaces than needed, drivers would have to park in other facilities in the study area or further away at on-street parking spaces, forcing them to cruise around to find a space. The occupancy rates for the parking facilities in the eastern part of the Fisherman's Wharf area seem to indicate that this additional demand can be absorbed, especially on weekdays. If it is made more difficult to park close to the project at peak periods by increasing the general parking shortage at peak periods, in the long term, more drivers would be induced to use other modes of transportation.

With a moderately improved transit service, the parking supply would slightly exceed the demand on Saturday nights.

With significantly improved transit service the number of spaces supplied would always exceed the demand. This would allow the elimination of on-street parking spaces, which might be necessary to improve transit to such a high level.

The proposed parking garage is planned to be built on the block surrounded by the Embarcadero, Beach Street, and Powell Street. This location would allow drivers to drive and park close to the waterfornt. If the Embarcadero were closed between Beach Street and Powell Street, this block would become part of a pedestrian zone and the Beach Street/Powell Street bypass would become a major traffic arterial. All access points to the garage would be concentrated on Beach and perhaps Powell, generating high traffic volumes on these streets and causing additional congestion at the intersections.

E. PEDESTRIAN CIRCULATION

The additional pedestrians walking to and from the Fisherman's Wharf area generated by the proposed project were not included in the foregoing travel generation estimates. Based on the survey results, an additional 15 percent of the estimated total person-trips to the Wharf area would be made on foot on an average Saturday. This proportion would tend to be lower on Fridays because the visitor proportion would be lower and the proportion of local people coming to the site with a specific purpose would be higher. The proposed project would thus generate approximately an additional 1,750 (0.15 x 11,679) pedestrians to the study area on an average Saturday.

It can be estimated that a total of 25,000 to 35,000 persons would walk on the project site on an average Saturday. This represents high pedestrian densities and flows and would require large pedestrian areas and sidewalks.

The pedestrian densities in the total Fisherman's Wharf area and more particularly near the project site would increase and would tend to aggravate the conflicts with the vehicle traffic. Traffic flow and congestion would suffer from the increased pedestrian activity. Accident hazards for pedestrians would also increase if no imporvements were made for the pedestrian circulation.

The proposed project would provide an excellent opportunity to improve the walking environment and accessibility to the waterfront. Large landscaped pedestrian areas and easy accessibility to the waterfront with a good view over the bay could attract many people to the project.

F. RAILROAD AND FREIGHT FACILITIES

If the proposed project were built, the tracks and storage area for railroad cars along the Embarcadero would be removed and replaced by the park area. The few operations currently taking place on these tracks would be discontinued and replaced by trucks or completely phased out. Any opportunity to use the existing tracks for any other transportation or transit use in the future would be reduced or eliminated.

One pair of tracks would remain to serve the Presidio, Pier 45, the rail cars, and the ferry loading slip at Pier 43. This plus a second pair of tracks could be retained for a proposed possible Embarcadero light-rail transit system.

III. MITIGATION OF TRANSPORTATION IMPACTS

A. TRAVEL GENERATION

The amount of travel generated by the proposed project could be decreased in three ways:

1. Reducing the size of the project by constructing fewer feet of restaurants and shops or fewer berths. This would run counter to the economic objectives of the proposed project, however.

2. Influencing the travel or visitor-generation rate, for example, by constructing more luxurious restaurants with lower turnover rates and fewer seats per thousand square feet; by constructing sport fishing berths for smaller boats; or by constructing facilities with lower trip generation rates instead of those proposed (e.g., building more stores and fewer restaurants). Some of these strategies might be uneconomical.

3. Reducing the proportion of additional travel to the Wharf area generated by the proposed project; in other words,reducing the prime purpose factor. Such a strategy would gear the proposed development more toward people who already visit the Wharf area and would not attract as many new (additional) visitors. This would be achieved by building more stores or restaurants that would attract tourists instead of local residents or any other facility that would attract the Fisherman's Wharf visitors to the proposed project. It could also be achieved by physically improving the connections between the proposed project and the Wharf area, by building attractive and convenient walking links, or by implementing a shuttle bus serving the waterfront.

B. VEHICLE TRAVEL AND TRAFFIC

The most efficient measures to lessen traffic impacts are in the realm of traffic engineering methods to improve traffic flow conditions. As indicated, traffic circulation at peak periods will suffer from the many conflicts with the pedestrians. This can be improved by better separation between these two movements and by allowing sufficient space for the pedestrians. Separate signalization phases for pedestrians or prohibition of right or left turns for vehicles at congested intersections could avoid these conflicts and the resulting congestion. Wide sidewalks would provide ample comfortable space for pedestrians.

The capacities at certain intersections could be improved by adding turning lanes. The turning vehicles would thus not obstruct through traffic. Additional turning lanes should be considered for the intersections at Beach and Powell and Beach and Stockton. In some instances, turning lanes can be added by removing on-street parking. Elimination of on-street parking would also have a beneficial effect on the traffic flow and capacities. One-way street couplets, as have been proposed in the Northern Waterfront Plan, would significantly improve the traffic capacity in that area.

Two factors should be considered in conjunction with the above measures. First, elimination of on-street parking and replacement with a regular traffic lane would significantly increase traffic and vehicle speeds in that street. An important protective barrier would disappear between the vehicles and the pedestrians, creating a hazardous, uncomfortable, unattractive situation for the pedestrians. Second, these traffic engineering solutions would make the area more attractive to drivers and would induce more people to drive to the Fisherman's Wharf area. In the long run, this would tend to be self-defeating in terms of traffic flow improvements and would have adverse effects on the general environment in the Fisherman's Wharf area.

Two alternative mitigation measures designed to reduce the vehicular traffic demand should, therefore, be seriously considered. The first would consist of a pedestrian zone along the Embarcadero and Jefferson. (See details Section III.E.) Such a car-free zone would improve the separation between vehicular traffic and pedestrians as well as the general walking environment and would attract more visitors to the area. Adequate planning would be required to avoid or minimize increased congestion on Beach and North Point.

The second traffic-reducing measure consists of improvement and increased coordination of the transit service in the Fisherman's Wharf area. Additional transit routes, shorter headways, good coordination, adequate information, and convenient waiting and boarding facilities close to the visitors' destinations would make this mode more attractive. To reduce vehicular traffic in the area and improve the traffic flow, it would be essential to coordinate these two measures adequately so that the car-free zone would be instituted simultaneously with the transit improvement. A public and tourist campaign effort would inform all potential visitors of the auto restrictions and of the alternative modes to get to Fisherman's Wharf. It is also important to allow transit vehicles into the car-free zone so that they can bring visitors closer to their destinations than cars. Rerouting of Muni buses 15, 19, 42, and 32 would be considered, as well as an internal transit system within the Wharf area. The establishments at Fisherman's Wharf could be encouraged to reimburse the transit fares.

These measures could not only decrease traffic and improve the general environment but could reduce the parking demand in the study area.

C. TRANSIT MITIGATION MEASURES

The negative impacts on the transit system resulting from the proposed project would be increased operating costs created by an improved transit level of service, especially on the cable car line. This additional cost would be off-set by a higher fare (possibly 50¢) charged on the cable cars on weekends and holidays, when the demand is highest and when there is the highest proportion of visitors. Tourist would be hurt less by a fare increase than would commuters, since they use the cable cars only a limited number of times and ride it partly as an experience and not just as a transportation mode.

The bus route along the Embarcadero and any other future transit system along that arterial could provide an excellent opportunity for a transit mode near or on the project site. A well-designed, comfortable waiting and transfer area could attract more visitors to the project.

If the bus routes remain on the Embarcadero, close to the piers, and are not relocated with the regular vehicular traffic on the proposed Beach-Powell Street bypass, visitors will be able to get closer to their destinations by bus than by car. This will tend to encourage more visitors to use transit instead of their cars to come to the Wharf area and will have a positive impact on air pollution, congestion, and parking shortage.

D. PARKING MITIGATION MEASURES

Sufficient access and exit points of the proposed parking garage should be planned so that the peak movements (in and out) can be accommodated without an impact on the traffic flow. The access points should be designed to minimize conflicts between vehicle and pedestrian flows.

In view of uncertainties about the future evolution of parking regulations and policies and other policies that will influence auto use and parking demand, a high degree of fexibility should be built into the proposed parking garage. To avoid over-building the proposed facility, a staged construction scheme of the parking garage should be considered.

If the 150 parking spaces that have been approved and will be reserved for the Harbor Tug and Barge Company were not all needed on Fridays, the unused spaces would be assigned to vehicles attracted to the project on that peak day, thus decreasing the amount of unmet demand. The 150 spaces would then be reserved on the peak days for the operation of the Harbor Tug and Barge Company.

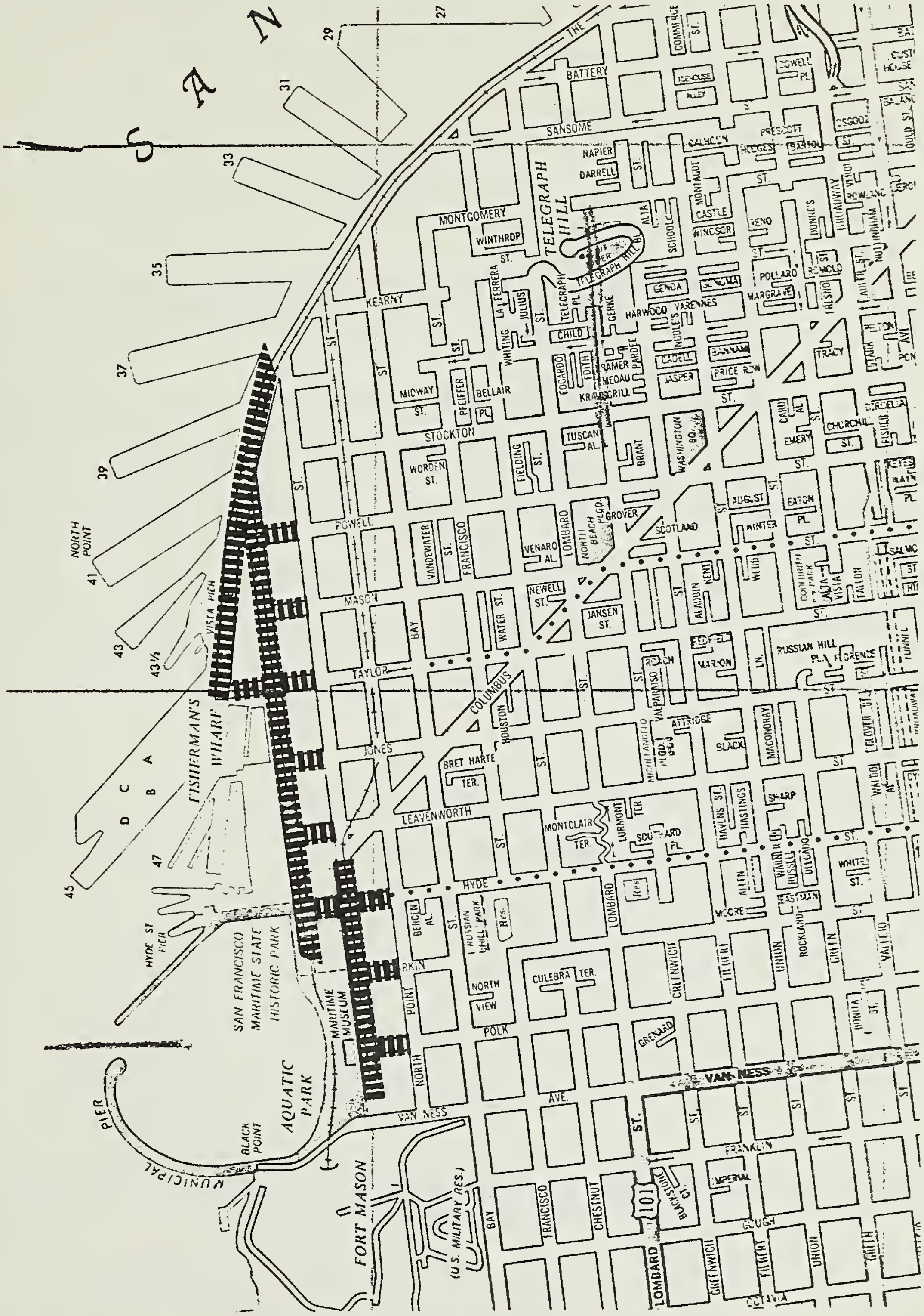
Regarding access to the parking facilities and their impact on the traffic flow, access points should be designed so that the traffic flow on the arterials would not be hampered by vehicles driving in and out of the facility. Precautions would have to be taken at each point to reduce conflicts between the entering and existing vehicles and the pedestrians crossing the driveway. Good visibility should be provided to the existing vehicles so that they can see pedestrians early enough. The possibility of locating the second access point at the Powell-Jefferson intersection should be investigated,

E. PEDESTRIAN MITIGATION MEASURES

More space would have to be provided for pedestrians if the proposed project were built. Wider sidewalks should be provided between the proposed project and the major transportation terminals (bus stops, parking facilities, cable car terminal) and other major destinations (Fisherman's Wharf, Blue Shield offices, bus depot, Cost Plus, etc.).

A weekend car-free zone including the Embarcadero from Beach Street to Fisherman's Wharf, all of Jefferson Street, and Beach Street west of Columbus Avenue should also be considered (see Exhibit F-F). This pedestrian zone would be closed to private vehicles on weekends and holidays from 10 a.m. to 9 p.m. Only transit and emergency vehicles would be allowed at those hours. Access could be allowed to certain parking facilities. If desirable, this vehicle restriction could also be applied at peak visitor weekdays in July and August.

If a car-free strategy were well publicized and coordinated with the transit and parking systems, it could tend to induce visitors to come to the Fisherman's Wharf area by other modes than by automobile and could create a safe pleasant walking environment which in the long run would benefit all merchants in the area. Such a large pedestrian zone could tent to unify all the different sub-areas (Ghirardelli, Fisherman's Wharf, and the project area) and would provide the area with a peaceful and relaxing atmosphere, inducing more visitors to stay longer. Such a strategy could be applied with a certain flexibility where, on low-visitor weekends or on rainy weekends, the pedestrian zone were opened to vehicular traffic.



▥ PROPOSED PEDESTRIAN ZONE CLOSED TO VEHICULAR TRAFFIC ON WEEKENDS AND HOLIDAYS FROM 10AM TO 9PM. OPEN TO TRANSIT AND EMERGENCIES ONLY. ACCESS WOULD BE ALLOWED TO CERTAIN PARKING FACILITIES

PROPOSED PEDESTRIAN ZONE

N

EXHIBIT F-F

APPENDIX G

GAS AND ELECTRICAL CONSUMPTION CALCULATIONS

Daily gas consumption figures were derived as follows:

> The mechanical engineer[1] provided the daily gas consumption in Therms. This figure was then multiplied by 100,000 to get 2,100 x 10^5 BTU. The daily BTU figure was then divided by the square footage (200,000) to get 1,050 BTU/square foot/day.

Monthly electrical consumption figures were derived as follows:

> The electrical engineer[2] estimated that the project would consume 7,570,700 kwh per year. This figure was then divided by 12 to get an average monthly figure. That figure was then divided by 200,000 square feet to obtain the square foot figure.

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[1] Dick H. Fujioka, consulting mechanical engineer, October 23, 1975.

[2] William Mazzetti, electrical engineer, October 30, 1975.

APPENDIX H

PROJECT WASTEWATER GENERATION

The following formulas were used to compute wastewater generation for Phase I and Phase II levels of development of the proposed project.

Restaurant space is given as 33,750 gross square feet (gsf) for Phase I and 98,000 gsf for Phase II. Restaurant wastewater generation is assumed to be 35 gallons per seat per day.[1] To compute the number of seats in a given amount of gross floor space, the following assumptions were used:

- Net floor space is 85 percent of gross floor space;
- Dining room area is 55 percent of total restaurant area;
- Each seat requires 15 square feet of dining room space.

Therefore:

Phase I = 33,750 gsf x 0.85 = 28,690 net square feet (nsf)
28,690 nsf x 0.55 = 15,780 sq.ft. dining room space

15,780 sq.ft. ÷ 15 = 1,052 seats
1,052 x 35 gallons = 36,820 gallons per day

Phase II = 98,000 gsf x 0.85 = 83,300 nsf
83,300 nsf x 0.55 = 45,815 sq.ft. dining room space

45,815 sq.ft. ÷ 15 = 3,055 seats
3,055 x 35 gallons = 106,900 gallons per day

Retail wastewater generation is assumed to be 20 gallons per day per employee for small businesses.[2] To arrive at a number of employees, it was assumed that 500 gsf would generate one employee.[3] Therefore:

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[1] Metcalf and Eddy, Wastewater engineering (New York: McGraw-Hill), 1972.

[2] Ibid.

[3] Baxter, McDonald & Smart, Inc., Socioeconomic impacts of environmental policies, 1973.

Phase I = 11,250 gsf ÷ 500 gsf = 23 employees
23 x 20 = 460 gallons per day

Phase II = 42,000 gsf ÷ 500 gsf = 84 employees
84 x 20 = 1,680 gallons per day

Office wastewater generation is given as 15 gallons per day per employee. To arrive at a number of employees, the following assumptions were used:

- 150 nsf per employee;
- net floor space is 85 percent of gross floor space.

Therefore:

Phase I = no office space

Phase II = 60,000 gsf x 0.85 = 51,000 nsf
51,000 nsf ÷ 150 nsf = 340 employees
340 x 15 = 5,100 gallons per day

Management employees were assumed to generate amounts of wastewater equal to those generated by office employees. Figures for employment generation were provided by the project developer.

Phase I = 4-5 employees x 15 = 75 gallons per day (high range)

Phase II = 15 employees x 15 = 225 gallons per day

Total wastewater generation, then, is as follows:

	Phase I	Phase II
Restaurant	36,820 gpd	106,900 gpd
Retail	460	1,680
Office	0	5,100
Management	75	225
Total	37,355 or 37,500	113,905 or 113,900

APPENDIX I

CITY AND COUNTY OF SAN FRANCISCO
DEPARTMENT OF PUBLIC WORKS

OFFICE OF THE
DIRECTOR OF PUBLIC WORKS

260 CITY HALL
SAN FRANCISCO
CALIFORNIA 94102

May 20, 1976

North Point Park/Marina
Draft EIR
File #34

RECEIVED
2 1976
CITY & COUNTY OF S.F.
DEPT. OF CITY PLANNING

Mr. Edward I. Murphy
Acting Director
City Planning Department
100 Larkin Street
San Francisco, CA 94102

Attention: Mr. Will Hardee
Project Coordinator

Gentlemen:

Reference is made to our letter of April 27, 1976, and to a recent meeting between Mr. Scott Shoaf of our staff, Mr. Bob Meyers of the Department of City Planning, and Mr. George Jacquemart of Alan M. Voorhees & Associates regarding traffic generation estimates for the subject project.

Based on discussions at the aforementioned meeting regarding specific aspects of the proposed project as they relate to the existing Fisherman's Wharf land use, we have revised our weekend projections of traffic increases and parking demand generated by the proposed project.

We now estimate a 24-hour traffic generation to the proposed project of 4,200 vehicles. We estimate a parking demand for 820 spaces to be generated by the proposed development during the period of peak parking demand in the Fisherman's Wharf area. This would occur between 2 and 3 p.m. on a Saturday afternoon. It should be pointed out, however, that the anticipated peak parking demand generated by the proposed project, which is heavily weighted to restaurant and boat (marina) facilities, will occur somewhat earlier on a Saturday (at lunch time) than the present peak parking demand occurs (at 3 p.m.). We anticipate that this peak parking demand would occur between noon and 1 p.m. and would be in excess of 900 spaces.

We feel that the projected traffic generated by the proposed project could be handled on the existing street system or by the various alternatives evaluated in our "Fisherman's Wharf Study Report No. 1," with the following types of improvements:

1. Additional lanes by means of parking restrictions.
2. Increased control with traffic signals or additional STOP SIGN installation.

With regard to the projected parking demand, we offer the following comments.

1. Some off-street parking is available in the vicinity of Pier 39 in the Sheraton Hotel garage, which appears to be presently underused. As many as 200 parking spaces may be available in this facility to help meet future demand (or projected shortage) in the vicinity.
2. If on-street parking spaces are removed in the area to construct a North Point Park, or for other reasons, the spaces so lost will create an additional parking demand for the remaining spaces in the area. This factor should be taken into consideration in projecting future parking shortages in the area.

It should be noted that the projections of traffic and parking generation in our recently completed "Fisherman's Wharf Study Report No. 1" (April 1976) also need revision. Revised projections will be included in a forthcoming second report, which will mainly address weekday traffic generation of proposed projects in the area.

If you have any questions regarding this matter, please contact Mr. Scott Shoaf of our Traffic Engineering Division at 558-3371.

Very truly yours,

Sm Tatarian

S. M. Tatarian
Director of Public Works

cc: Bob Meyers
George Jacquemart

CITY AND COUNTY OF SAN FRANCISCO
DEPARTMENT OF PUBLIC WORKS

OFFICE OF THE
DIRECTOR OF PUBLIC WORKS

260 CITY HALL
SAN FRANCISCO
CALIFORNIA 94102

May 24, 1976

North Point Park/Marina
Draft EIR
File #34

Mr. Edward I. Murphy
Acting Director
City Planning Department
100 Larkin Street
San Francisco, CA 94102

Attention: Mr. Will Hardee
Project Coordinator

Gentlemen:

The traffic and parking projections for the subject project, transmitted in our letter of May 20, 1976, assumed that the modal split of persons attracted to the proposed project would be the same as the present modal split of persons attracted to the present wharf facilities. If a different modal split were to be assumed, the traffic and parking projections would change accordingly.

The above comments were inadvertently omitted from our previous letter on this subject. We hope that they will put our projections on parking and traffic generation in proper perspective.

If you have any questions regarding this matter, please contact Mr. Scott Shoaf at our Traffic Engineering Division at 558-3371.

Very truly yours,

SM Tatarian

S. M. Tatarian
Director of Public Works

cc: Bob Meyers-City Planning
George Jacquemart-Alan M.
Voorhees & Associates

APPENDIX J

RECOMMENDED PARKING FOR NORTH POINT PARK/MARINA[1]

Under Sections 240.1(c) and 146(f) of the City Planning Code, the City Planning Commission determines parking requirements for developments reviewed by the Commission as Conditional Uses, based upon criteria set forth in the Code and may permit modification of the express parking requirements set forth in Section 138 of the Code. This report presents the findings and conclusions of the Department of City Planning concerning parking for the North Point Park/Marina development proposed by Warren Simmons for Piers 37 through 41 and Seawall Lot 311.

For the proposed project, the parking need for the composite of uses would be 754 spaces assuming moderately improved transit and 638 spaces for significantly improved transit. These figures would apply to summer Saturdays from noon to 3 p.m. during the busy visitor season and would be in addition to parking for the Harbor Tug and Barge Company. At almost all other days of the year, the need for parking would be less and fewer spaces would be needed.

To assist in determining parking needed for the proposed development, this report relied on three surveys that described the daily cycles of business activity and parking needs in the wharf area. They are The Report of the Mayor's Citizens Committee for the Preservation and Beautification of Fisherman's Wharf, telephone interviews with restaurant operators by staff of the Department of City Planning, and a detailed survey of traffic and parking conditions at the wharf conducted jointly in the summer and fall of 1975 by the Departments of Public Works and City Planning.

These three surveys indicated that summer Saturday afternoons were by far the busiest of all visitor days at Fisherman's Wharf when parking demand and traffic generation were greatest. Friday evenings and Sunday afternoons were next in terms of activity. This report assumed that the proposed development would have a variety of types of restaurants and shops and would reflect the range of establishments currently found at the Wharf. The proposed restaurants would vary in their turnover rates and the shops would differ in their clientele in a manner similar to those at the Wharf.

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[1] Prepared by San Francisco Department of City Planning.

The method used to estimate the spaces needed to serve the project is as follows:

> Total spaces needed = spaces required by City Planning Code or recommended by other planning standard, times the actual use as a percent of full code requirement, times the percent of visitors arriving by car for that use.

A) Planning Standards for Parking

Column A in the following chart shows the parking needed to meet San Francisco City Planning Code requirements or other standards for each use in the proposed development. The Planning Code specifies parking for occupied floor area of buildings. The building area in the North Point Park/ Marina proposal is in gross floor area which includes non-occupied floor area. Figures for occupied floor area can be obtained by reducing the gross floor area figures for each use by a factor for non-occupied floor area. Factors for non-occupied floor area are derived by the Project Review Section of the Department of City Planning in its review of major projects and includes circulation, storage, structural elements and mechanical equipment as follows:

1. Shops

67,000 gross square feet of shops should be reduced by a factor of 25 percent for non-occupied floor area to 50,250 sq. ft. yielding a need for 161 parking spaces based upon occupied floor area from the City Planning Code.

2. Restaurants

133,000 gross square feet of restaurants should be reduced by a factor of 30 percent for non-occupied floor area to 93,100 sq. ft. yielding a need for 465 parking spaces from the City Planning Code.

3. Small Boat Marina

Small boat marinas have no parking requirements in the City Planning Code. In 1975, BCDC issued a permit in Sausalito for 30 spaces for 90 boats or 0.33 parking spaces per boat. The Emeryville harbor master reports that in auto-oriented Emeryville, 0.6 space is adequate. Provision of 0.45 space per boat would appear to be adequate for San Francisco.

4. Sports Fishing

Currently there are 33 sport fishing boats operating from Fisherman's Wharf. If 50 boats were to operate from the development as projected, and if they were similar in size to the larger boats now used, they could have a capacity of 1100 persons when completely filled. Standards used in San Diego for planning parking for sports fishing have assumed parties arriving in a ratio of two persons per car. This ratio would be low for San Francisco, where people are more accustomed to carpooling. A spokesperson for the Muny Bait Shop, which operates 18 boats in Fisherman's Wharf, has stated that their groups are large, and at least three persons arriving per car are typical.

Sports fishing boats operate nine months of the year during the fishing season. The boats may be filled to capacity on 20 Saturdays, mostly during the summer. On 20 other Saturdays during the season they may be only three-fourths filled. If boats are chartered by groups they are usually also not filled. Planning standards should be set then, not for days when all boats may be filled to capacity which occur only 7 to 12 percent of the days of the fishing season (or only 5 to 10 percent of the year) but for three-fourths of the proposed total capacity or 825 persons. If these people arrive three per car, 275 spaces will be needed to meet the peak parking needs of sports fishing before any reductions for transit use are made.

Currently there are 33 boats operating from Fisherman's Wharf and 47 operating elsewhere in the Bay Area. To meet projections of 50 boats, the development would have to attract almost 40 percent of those boats now operating outside of San Francisco in the Bay Area, or rely upon addition of new boats to the fleet.

B) Actual Use as a Percent of Full Code Requirement

Column B describes how busy a particular use is at different times of the day in terms of "very light" to "very heavy". The percentages with these descriptions show the relationship between actual parking needed for those uses and the requirements of the Planning Code or recommendations of other standards. For example, the need for parking for shops based on how busy they are between 3 p.m. and 5 p.m. on summer Saturdays is "very heavy" and could be 100 percent of the Code requirement or 161 spaces. This figure would be reduced in columns C, D, and E based on possible improvements in transit.

C, D, and E) Parking Need Generated

These columns show that the Code required parking could be further reduced if allowances are made for improvements in transit to and within the wharf. Moderately improved transit, alternative (a), consists of minor reroutings of existing Muni lines serving the wharf with promotion of service. It also consists of a recreational shuttle within the wharf area and possibly an expansion of that shuttle to the Ferry Building at the foot of Market Street. Significantly improved transit, alternative (b), assumes extension of the Mason-Taylor cable car line to the waterfront and improved bus or new rail service between Van Ness Avenue, the Embarcadero Bart Station, the Ferry Building and possibly the Southern Pacific Terminal south of Market Street. Figures for the percent of trips by car to the project were derived from those proposed by Alan M. Vorhees & Associates and acknowledge that some transit usage is assumed in the parking requirements of the City Planning Code.

E) Harbor Tug and Barge

In addition to the parking generated by the project, it has been proposed that the garage proposed for the development park 150 cars belonging to employees and guests of the Harbor Tug and Barge Company and the Harbor Tours Company. An agreement has been made with the developer of North Point Park Marina to do so. These would be long-term spaces for a garage otherwise intended for short-term, high turnover use. Those companies now use 30 spaces on Pier 43, 12 on Pier 41, and others with green meters along The Embarcadero in front of Pier 41, for a total of fewer than 100 spaces. It should be noted that the objectives and policies of the Transportation Element of the Master Plan discourage growth in use of the automobile for work trips, and particularly single-occupancy auto trips into congested areas of the City.

A&B) PARKING NEED GENERATED BY PROPOSED PROJECT (SHOWING USE ON BUSY SUMMER SATURDAYS)

	A	B		
USE	Spaces Required By City Planning Code or Other Standard Before Reduction	Actual Use As Percent of Full Code Requirements or Other Planning Standard		
		12noon-3pm	to 5pm	to 9pm
Shops	161. Planning Code (based on occupied floor area)	Heavy 80%	Very Heavy 100%	Heavy 85%
Restaurants	465. Planning Code (based on occupied floor area)	Heavy 85%	Heavy 80%	Very Heavy 100%
Marina	113. Current Usage	Very Heavy 100%	Very Heavy 100%	Moderate 70%
Sports Fishing	275. Current Usage	Very Heavy 100%	Heavy 80%	Very Light 20%
TOTAL				

C) PARKING NEEDED FROM NOON TO 3 P.M.

USE	Moderately Improved Transit (% By Car) (a)	Significantly Improved Transit (% By Car) (b)	Spaces Alternative (a)	Spaces Alternative (b)
Shops	70%	55%	90	71
Restaurants	75%	60%	296	237
Marina	95%	85%	107	96
Sports Fishing	95%	85%	261	234
TOTAL			754	638

D) PARKING NEEDED FROM 3 P.M. TO 5 P.M.

USE	Moderately Improved Transit (% By Car) Alternative (a)	Significantly Improved Transit (% By Car) Alternative (b)	Spaces Alternative (a)	Spaces Alternative (b)
Shops	70%	55%	113	89
Restaurants	75%	60%	279	223
Marina	95%	85%	107	96
Sports Fishing	95%	85%	209	187
TOTAL			708	595

E) PARKING NEEDED FROM 5 P.M. TO 9 P.M.

USE	Moderately Improved Transit (% By Car) Alternative (a)	Significantly Improved Transit (% By Car) Alternative (b)	Spaces Alternative (a)	Spaces Alternative (b)
Shops	70%	65%	96	89
Restaurants	75%	70%	349	326
Marina	95%	90%	75	71
Sports Fishing	95%	90%	52	50
TOTAL			572	536

APPENDIX K

Excerpt from "Feasibility study for small craft harbor improvements at Fisherman's Wharf", prepared by Williams-Kuebelbeck & Associates, Inc. April 16, 1976

C. Characteristics of the Restaurant and Specialty Retail Market for Fisherman's Wharf

The Fisherman's Wharf area serves as an extremely successful restaurant and tourist-commercial center. The purpose of this analysis is to review the market support for these facilities and to determine the potential for additional commercial activities within the feasibility study project area. Emphasis will be focused upon the demand for dinner restaurants (those engaging in the sale of alcoholic beverages) and specialty retail shops.

For this analysis, the San Francisco trade area is defined to include the entire City and County of San Francisco. However, business occurring within this trade area, is by no means limited to customers residing within the trade area. In fact, the market for commercial activities in San Francisco can be categorized into three major segments: San Francisco City and County residents; San Francisco Bay Area residents residing outside San Francisco; overnight visitors to San Francisco composed primarily of tourists and convention delegates.

As shown in Table V-14, over 2.5 million visitors arrived in San Francisco during 1974 for a stay of at least one night. Data available over the past five years indicates that visitor arrivals have been increasing by an average of more than 7 percent annually. However, during this same period, the average visitor length of stay has been declining slightly. In terms of economic impact on the City of San Francisco, the key variable is visitor nights, the product of total visitors times their average length of stay. Historically visitor nights have been increasing at an annual rate well over 3 percent.

Table V-15 illustrates the magnitude of the economic impact resulting from convention and tourist business in San Francisco. As shown, $430 million was spent in San Francisco during 1974 by visitors. The two spending categories of particular interest to this analysis, restaurants outside of hotels and retail stores, both experience a sizable share of total visitor spending. In fact, the $78 million spent by visitors in San Francisco restaurants represents nearly 40 percent of San Francisco's total volume.

The other two market segments, residents of San Francisco and residents of the surrounding Bay Area counties, will be described in conjunction with the following analyses on restaurant and specialty retail demand.

1. Demand for Dinner Restaurants

Dinner restaurants, defined according to the State Board of Equalization category as eating and drinking places serving all types of liquor, have traditionally been concentrated in San Francisco and are in themselves a significant tourist attraction. As shown in Table V-16, San Francisco sales nearly doubled from $109 million in 1960 to $201 million in 1974. However, much of this is due to the effect of inflation and, when this is eliminated, real increases in constant 1974 dollars constitute an average of only .3 percent annually. Moreover, San Francisco's share of the Bay Area's restaurant business has declined from over 40 percent in 1960 to about 33 percent in 1974.

Table V-14

SAN FRANCISCO

CONVENTION AND TOURISM TRENDS

1970-1974

Year	Estimated Visitors (000)	Approximate Length of Stay	Visitor Nights (000)
1970	1,935	3.3	6,385
1971	1,902	3.2	6,086
1972	2,105	3.1	6,525
1973	2,421	3.0	7,263
1974	2,565	2.9	7,438
Four Year Average Annual Change	7.30%	(3.18%)	3.89%

Source: Revised estimates of the total number of visitors to San Francisco prepared by the School of Business, San Jose State University in 1974; Williams-Kuebelbeck and Associates, Inc.

Table V-15

SAN FRANCISCO

COMBINED CONVENTION AND TOURISM EXPENDITURES - 1974

Spending Category	Total Dollars (000,000)	Percentage of Total	Dollars Per Visitor Night
Hotel or Motel Rooms	$150.9	35.1	$20.29
Hotel or Motel Restaurants	40.0	9.3	5.38
Other Restaurants	78.3	18.2	10.53
Retail Stores	58.5	13.6	7.87
Local Transportation	16.3	3.8	2.19
Sightseeing	9.9	2.3	1.33
Entertainment	34.8	8.1	4.68
Auto: Oil, Gasoline, Servicing	13.3	3.1	1.79
Other Items	28.0	6.5	3.76
Total	$430.0	100.0	$57.81

Source: San Francisco Convention and Visitors Bureau 1974 Annual Report; Williams-Kuebelbeck and Associates, Inc.

Table V-16

TRENDS IN DINNER RESTAURANT SALES

SAN FRANCISCO COUNTY AND TOTAL (SIX COUNTY) BAY AREA

1960-1974

	1960	1970	1974	Average Annual Percentage Change 1960-1974
SIX COUNTY BAY AREA				
Population (000)	3,324	4,179	4,295	1.8
Dinner Restaurant Sales (000)	$240,294	$443,455	$603,502	6.8
Sales to S.F. Overnight Visitors (000)[1]	$ 29,143	$ 56,768	$ 78,300	7.3
Sales to Bay Area Residents (000)	211,151	386,687	525,202	6.7
Per Capita Resident Sales	$ 63.52	$ 92.53	$122.28	4.8
[Per Capita Adjusted to 1974 Dollars[2]	112.82	113.40	122.28	.6]
SAN FRANCISCO COUNTY				
Population (000)	742	712	679	(.6)
Dinner Restaurant Sales (000)	$109,318	$166,488	$201,669	4.5
[Dinner Restaurant Sales Adjusted to 1974 Dollars (000)[2]	194,171	204,029	201,669	.3]
Sales to S.F. Overnight Visitors (000)[1]	$ 29,143	$ 56,768	$ 78,300	7.3
Sales to Bay Area Residents (000)	80,175	109,720	123,369	3.1
S.F. Resident Per Capita Sales[3]	$ 63.52	$ 92.53	$122.28	4.8
Sales to S.F. Residents (000)	$ 47,132	$ 65,881	$ 83,028	4.1
Remainder to Other Bay Area Residents (000)	$ 33,043	$ 43,839	$ 40,341	1.4
Per Capita to Other Bay Area Residents[4]	$ 12.80	$ 12.64	$ 11.16	(1.0)
[Per Capita Adjusted to 1974 Dollars[2]	22.74	15.49	11.16	(4.9)]

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[1] Assumes a 3 percent annual real growth rate adjusted by the San Francisco-Oakland Price Index for food away from home.

[2] Lines in brackets are to indicate the real growth rate; parenthesis indicate rate of decline; both in constant 1974 dollars.

[3] Assumed to be the same as the rate for Bay Area residents at large.

[4] Includes Alameda, Contra Costa, Marin, San Mateo and Santa Clara Counties.

Source: California Department of Finance; California State Board of Equalization; Williams-Kuebelbeck and Associates, Inc.

One of the reasons for this relative decline is the decrease in resident population in San Francisco County. This represented a decline from 742,000 residents in 1960 to 679,000 in 1974. We assume that per capita restaurant expenditures by San Francisco residents is similar to those of Bay Area residents taken as a whole and furthermore that they are expended entirely within San Francisco. On this basis, after subtracting restaurant sales to San Francisco overnight visitors ($78.3 million) and estimated expenditures to San Francisco residents ($83.0 million) the remainder ($40.3 million) represents expenditures by Bay Area residents from beyond the limits of San Francisco County. As shown in Table V-16, in 1974 this represented a per capita expenditure of over $11. During the past fourteen years, per capita expenditures from this market category have been declining in both current dollars and constant 1974 dollars. This phenomenon is the result of substantial restaurant development outside the San Francisco area and possibly because the increasing influx of tourists during the summer season creates too much congestion for the enjoyment of Bay Area residents.

The factors derived in Table V-16 are employed in Table V-17 to project future dinner restaurant sales in San Francisco. All dollar figures in the table are in constant 1974 dollars, such that any growth rates indicated constitute real growth aside from the impact of inflation. We anticipate that the convention and tourist business will continue to grow at an annual rate of 3 percent. As shown, this would cause dinner restaurant sales to visitors to increase from $78.3 million in 1974 to $93.5 million by 1980 and $125.6 million by 1990.

According to the State Department of Finance, San Francisco population will not change substantially over the next decade or so. As shown, the current level of 679,000 is expected to decline to about 653,000 by 1985 and then stabilize. Although its population is declining slightly, per capita restaurant sales are expected to continue to increase at a rate of .6 percent annually. This corresponds to the historic rate indicated in Table V-16. Thus, the net impact on sales to residents will be upward with an increase from $83 million in 1974 to $88 million by 1990.

Table V-17

PROJECTED DINNER RESTAURANT SALES IN SAN FRANCISCO

1974-1990

	1974	1980	1985	1990	Average Annual Percentage Change 1974-1990
CONVENTION AND TOURIST					
Dinner Sales From Overnight Visitors (000)	$ 78,300	$ 93,500	$108,400	$125,600	3.0
RESIDENT					
San Francisco Population (000)	679	661	653	654	(.2)
Per Capita Restaurant Sales	$122.28	$126.75	$130.60	$134.56	.6
Dinner Sales to Residents (000)	$ 83,000	$ 83,800	$ 85,300	$ 88,000	.4
BAY AREA OUTSIDE SAN FRANCISCO					
Population (000)	3,616	3,966	4,264	4,549	1.4
Per Capita Expenditures in S.F.	$ 11.16	$ 8.26	$ 6.42	$ 5.00	(4.9)
Dinner Sales to Bay Area Residents Outside S.F. (000)	$ 40,400	$ 32,800	$ 27,400	$ 22,700	(3.5)
TOTAL S.F. DINNER SALES (000)1/	$201,700	$210,100	$221,100	$236,300	1.0
Increase Over 1974 (000)	--	$ 8,400	$ 19,400	$ 34,600	-
Average Annual Increase Over Previous Period (000)	--	$ 1,400	$ 2,200	$ 3,000	-

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1/ In constant 1974 dollars.

Source: Williams-Kuebelbeck and Associates, Inc.

The remainder of restaurant sales in San Francisco represent sales to residents of the other five Bay Area Counties. We have shown in Table V-16 that, on a per capita basis, these have been declining at a rate of 4.9 percent annually. Assuming this rate of decline continues, dinner sales to residents of the Bay Area other than San Francisco are expected to decline from $40.4 million in 1974 to less than $23 million by 1990.

The combined impact of these three markets will generate an upward trend in San Francisco restaurant sales. From the $201.7 million level in 1974, we anticipate an average annual increase of about one percent (in 1974 constant dollars) with the annual total reaching $236 million by 1990. This represents an increase in the growth rate of dinner sales in San Francisco over the .3 percent annual average experienced from 1960 through 1974. As shown in Table V-17 this will generate an increase of $8.4 million by 1980, an additional $11 million (to $19.4 million) by 1985, and an additional $15.2 million (to $34.6 million) by 1990.

2. Demand for Specialty Retail Shops

Specialty retail shopping facilities can include almost any type of retail merchandise. The major distinguishing factor involves the type of setting in which retail outlets are provided. Ghirardelli Square and The Cannery are perhaps two of the best examples of specialty shopping centers on the west coast. For the purpose of this study, we have combined a set of retail categories likely to situate in specialty complexes to provide an estimate of expenditure trends. These categories include specialty stores such as gift shops, art goods and novelties, sporting goods, photographic equipment, stationary and books, jewelry, etc. In addition, to indicate the typical mix of a specialty complex, we have included 10 percent of all apparel store sales, 1 percent of all general merchandise store sales, and 1 percent of all food store sales. On this basis, specialty retail sales in the six county Bay Area totaled nearly $838 million in 1974.

Table V-18 outlines trends in sales of specialty merchandise in the San Francisco Bay Area. We have assumed that one-third of retail store purchases

Table V-18

TRENDS IN SPECIALTY RETAIL SALES

SAN FRANCISCO COUNTY AND TOTAL (SIX COUNTY) BAY AREA

1960-1974

	1960	1970	1974	Average Annual Percentage Change 1960-1974
SIX COUNTY BAY AREA				
Population (000)	3,324	4,179	4,295	1.8
Specialty Retail Sales (000)	$258,933	$551,702	$837,985	8.8
Sales to S.F. Overnight Visitors (000)1/	$ 7,838	$ 13,895	$ 19,500	6.7
Sales to Bay Area Residents (000)	251,095	537,807	818,485	8.8
Per Capita Resident Sales	$ 75.54	$128.69	$190.57	6.8
[Per Capita Adjusted to 1974 Dollars2/	124.24	160.46	190.57	3.1]
SAN FRANCISCO COUNTY				
Population (000)	742	712	679	(.6)
Specialty Retail Sales (000)	$104,358	$167,623	$229,743	5.8
[Specialty Retail Sales Adjusted to 1974 Dollars (000)2/	171,641	209,006	229,743	2.1]
Sales to S.F. Overnight Visitors (000)1/	$ 7,838	$ 13,895	$ 19,500	6.7
Sales to Bay Area Residents (000)	96,520	153,728	210,243	5.7
S.F. Resident Per Capita Sales3/	$ 75.54	$128.69	$190.57	6.8
Sales to S.F. Residents (000)	$ 56,051	$ 91,627	$129,397	6.2
Remainder to Other Bay Area Residents (000)	$ 40,469	$ 62,101	$ 80,846	5.1
Per Capita to Other Bay Area Residents	$ 15.67	$ 17.91	$ 22.36	2.6
[Per Capita Adjusted to 1974 Dollars2/	25.77	22.33	22.36	(1.0)]

1/ Assumes a 3 percent annual real growth rate adjusted by the San Francisco-Oakland Price Index.

2/ Lines in brackets are to indicate the real growth rate; parenthesis indicate rate of decline; both in constant 1974 dollars.

3/ Assumed to be the same as the rate for Bay Area residents at large.

4/ Includes Alameda, Contra Costa, Marin, San Mateo and Santa Clara Counties.

Source: California Department of Finance; California State Board of Equalization; Williams-Kuebelbeck and Associates, Inc.

made by visitors to San Francisco are made at specialty retail type establishments. As shown in the table, sales to overnight visitors represent a relatively small (less than 3 percent) portion of Bay Area specialty retail sales which have been increasing at an annual rate of 8.8 percent. Comparable figures for the County of San Francisco indicate that specialty retail sales have increased at an annual rate of 2.1 percent since 1960 (in 1974 constant dollars). Similar to the case of dinner restaurant sales, San Francisco's relative share of the Bay Area business has been declining. One of the reasons for this is increasing competition within the other five counties which make up the two metropolitan areas of the San Francisco Bay Area. Accordingly, per capita purchases made by residents of these five counties in San Francisco have declined at an average annual rate of 1 percent (in 1974 constant dollars).

The identical procedure as that used to project future dinner restaurant sales in San Francisco has been used to indicate specialty retail potential. As shown in Table V-19, total specialty retail sales are expected to increase at an annual rate of 2.1 percent which is identical to the trend of the past 14 years. Unlike the restaurant market, however, the market for specialty goods derives largely from San Francisco residents. This market is expected to increase by $28.3 million by 1980, an additional $28.4 million (a total of $56.7 million) by 1985, and an additional $34.5 million (to $91.2 million) by 1990. This constitutes an average annual increase of about $5 million expected to occur within the County of San Francisco (in real 1974 constant dollars). As shown in the table, the resident market contributes nearly two-thirds of the total growth potential for retail sales.

3. Existing Facilities in and Near the Project Area

To review commercial potential in the Fisherman's Wharf area, existing facilities are categorized into four main commercial areas. These include Fisherman's Wharf itself, the tourist oriented facilities across from Fisherman's Wharf (south of Jefferson Street), The Cannery, and Ghirardelli Square. As shown in Table V-20, these four areas combined to provide a substantial array of restaurant and specialty retail outlets.

Table V-19

PROJECTED SPECIALTY RETAIL SALES IN SAN FRANCISCO

1974-1990

	1974	1980	1985	1990	Average Annual Percentage Change 1974-1990
CONVENTION AND TOURIST					
Specialty Retail Sales From Overnight Visitors (000)	$ 19,500	$ 23,300	$ 27,000	$ 31,300	3.0
RESIDENT					
San Francisco Population (000)	679	661	653	654	(.2)
Per Capita Specialty Retail Sales	$190.57	$228.88	$266.62	$310.59	3.1
Specialty Retail Sales to Residents (000)	$129,400	$151,300	$174,100	$203,100	2.9
BAY AREA OUTSIDE SAN FRANCISCO					
Population (000)	3,616	3,966	4,264	4,549	1.4
Per Capita Expenditures in S.F.	$ 22.36	$ 21.05	$ 20.02	$ 19.04	(1.0)
Specialty Retail Sales to Bay Area Residents Outside S.F. (000)	$ 80,900	$ 83,500	$ 85,400	$ 86,600	.4
TOTAL S.F. SPECIALTY RETAIL SALES (000)[1]	$229,800	$258,100	$286,500	$321,000	2.1
Increase Over 1974 (000)	--	$ 28,300	$ 56,700	$ 91,200	-
Average Annual Increase Over : Previous Period (000)	--	$ 4,700	$ 5,700	$ 6,900	-

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[1] In constant 1974 dollars.

Source: Williams-Kuebelbeck and Associates, Inc.

Table V-20

FISHERMAN'S WHARF AREA COMMERCIAL FACILITIES

(APPROXIMATE NUMBER AND SIZE)

Area	Restaurants		Shops	
	Number	Sq.Ft.	Number	Sq.Ft.
Fisherman's Wharf (Port Owned Area)	12	96,000	10	9,000
Fisherman's Wharf Area*	12	70,000	35	50,000
The Cannery	9	34,000	40	53,000
Ghirardelli Square	12	60,000	70	100,000
Total Area	45	260,000	155	212,000

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*Four blocks bordered by Jefferson, Powell, Beach and Leavenworth Streets

Source: Williams-Kuebelbeck and Associates Field Survey.

In the Fisherman's Wharf area, a dozen restaurants generate nearly $20 million in annual sales. Dinner restaurant sales, averaging approximately $200 per square foot annually, makes this area the most successful restaurant complex found in the state. Moreover, many of the restaurants do a substantially higher sales rate. Shops in this area are limited to relatively small souvenir shops some of which are adjuncts to the restaurants.

Across Jefferson Street from the Fisherman's Wharf area are a number of major restaurants as well as a substantial number of less expensive restaurants which take advantage of the Fisherman's Wharf drawing potential. In addition, there are a number of shops selling small gift items. However, as a whole, they offer a wider variety of merchandise than is found at the Fisherman's Wharf itself. As shown in Table V-20, the estimated total commercial space in this area is 120,000 square feet of which slightly more than half is composed of restaurants.

The Cannery provides a more extensive selection of merchandise -- generally higher priced than would be found at Fisherman's Wharf and its surrounding area. Estimated sales at The Cannery totaled $9.5 million for merchandise in 1974 and $5.4 million by restaurants during that year. On the basis of square footages indicated in Table V-20, these sales totals constitute an average rate of $180 per square foot for shops and $160 per square foot for dinner restaurants.

Ghirardelli Square offers one of the most complete selections of specialty merchandise found in this type of center. With 100,000 square feet of merchandising space, its shops approximated $13.6 million in sales during 1974. Its 12 restaurants (with a total of 60,000 square feet of space) grossed approximately $9.7 million during the same year.

On the basis of indicated sales rates and the general pattern of development viewed in this area over the past decade, we conclude that these are among the most successful shopping and restaurant concentrations to be found anywhere. Typically, a dinner restaurant is considered to be successful if it grosses at an average rate of $100 per square foot. Likewise, specialty merchandise facilities are viable at an even lower rate per square foot. Therefore, we conclude that these facilities are enjoying nearly twice the volumes required for satisfactory operation. On the other hand, rents are adjusted to this type of operation such that it does not follow that their business could be reduced by 50 percent and they would still survive.

The combined impact in 1974 of these four areas is estimated to be well over $40 million in gross annual dinner restaurant sales and more than $25 million in specialty merchandise sales. This restuarant volume represents approximately 20 percent of the dinner restaurant sales experienced in the entire City and County of San Francisco. Specialty merchandise sold in the area represents approximately 12 percent of the City and County of San Francisco total volume.

D. Potential for Additional Restaurant and Retail Development at Fisherman's Wharf

We feel the Fisherman's Wharf area should attract a substantial share of the potential growth projected previously in this section. Growth in demand for dinner restaurants derives heavily from the anticipated increase in tourism and convention business in San Francisco. Since the Fisherman's Wharf area has traditionally been the number one attraction in San Francisco, it stands to reason that tourist demand for dining facilities will continue to be heavily concentrated in this area. While specialty retail facilities cater more to the local market for actual sale of merchandise, they seem to do well in tourist oriented areas (as the experience of The Cannery and Ghirardelli Square would indicate) where tourists create much of the vitality in the centers even if they contribute a relatively small share of the retail dollar expenditures.

It is reasonable to assume that 50 percent of the anticipated growth in San Francisco restaurant facilities could be situated along the waterfront near Fisherman's Wharf. On this basis, $9.7 million of annual restaurant sales would be added by 1985. Based upon the new restaurants generating annual sales of approximately $100 per square foot, 97,000 square feet of new restaurant space could be added by this time. This assumes that the area will rely merely on growth in demand when, in fact, additional facilities in the waterfront area, would very likely cause a shift in demand from other areas throughout San Francisco. Consequently, the 144,000 square feet of restaurant space currently being contemplated in the three waterfront locations along the Fisherman's Wharf (as indicated below) could be absorbed over time without substantial impact upon existing establishments in the area.

	In Square Feet	
	Restaurant	Retail
Simmons - North Point Marina/Park	133,000	67,000
Hyde Street Pier (Commercial Fishing Oriented)	6,000	6,000
Taylor Street (Redevelopment)	5,000	5,000
Total	144,000	78,000

The 78,000 square feet of specialty retail space planned among the four proposed projects could be absorbed with only a 20 percent penetration of net new demand through 1985. We consider this to be well within the absorption potential of the area assuming an adequate variety of merchandise is offered, good parking and access to the public is provided, and an appeal to the resident market similar to that which has been generated by The Cannery and Ghirardelli Square is developed. Although we anticipate that a substantial amount of support for the restaurant additions will be provided by the tourist and visitor market to San Francisco, it is extremely important to develop new complexes in such a manner that the resident market will be induced to support the retail shops and restaurants.

Hence it is reasonable to estimate that the amount and type of new retail and restaurant space proposed in the Fisherman's Wharf area will be readily absorbed and supported under current and future demand estimates. These new projects are likely to cause advantageous impacts upon the existing facilities, as well as the general non-maritime businesses along the Northern Waterfront.

APPENDIX L

LeBlanc & Company

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MEMORANDUM REPORT

ECONOMIC IMPACTS RELATED TO DEVELOPMENT OF THE NORTH POINT PARK/MARINA

November 10, 1975

The emphasis of the analysis is placed upon (1) the probable market-oriented impacts of the project upon the immediate vicinity -- Fisherman's Wharf and other North Waterfront commercial centers -- that is, with respect to changing the business environment, and (2) other identifiable impacts upon San Francisco at large that might conceivably alter, in a major fashion, the city's economic climate. The report thus focuses upon elements of economic impact that could be questioned in the normal course of project review and approval.

MAJOR COMPONENTS OF THE PROPOSED DEVELOPMENT PROJECT

The proposed North Point Park/Marina Project is conceived to be, upon completion, a major new commercial recreation complex. The uses will be predominantly restaurants and retail shops. It will also include a modest amount of office space integrated with a large parking facility as well as other on-site (over water as well as land) improvements providing for a series of large public, water-oriented spaces.

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Present plans indicate that two phases are to be constructed. The first phase calls for some 45,000 SF of retail commercial space on Pier 39 (roughly 34,000 SF in restaurants and 11,000 SF in small retail shops). West of Pier 39 (between 39 and 41), berths are to be provided for 40 to 60 sportfishing craft. A public waterfront park is planned on the Embarcadero frontage from Piers 37 to 41 inclusive.

The second phase would include additional, major improvements on Pier 39 and 41. This portion would accommodate some additional 95,000 SF of restaurants and retail shops; the bulk of this development would be located on Pier 39, with a small portion on Pier 41 as indicated in plan drawings. Up to 60,000 SF of professional office space would be integrated into a 1,000-car parking facility to be located immediately opposite the waterfront project (at Beach and Powell Streets). A marina for small pleasure craft -- 250 berths -- is planned for the water area between Piers 39 and 35. Other water-oriented and landside attractions will be worked into the overall project as it proceeds, including further improvement of the major public spaces along the bulkhead line.

A total of some 140,000 SF of restaurant and retail shop space would be added in both phases, and some 60,000 SF of office space with the garage. With some 70-75 percent of the sales space (98,000 SF) allocated to restaurants, 12 to 14 actual restaurants might be located within the entire project. The remaining 42,000 SF of commercial space would be allocated to appropriate retail operations complementing the project's main features.

The proposed project is clearly planned as a theme commercial recreation complex with numerous historic San Francisco overtones accomplished through complementary attractions, as well as design features. The present development timetable for the first phase is approximately one and one-half years following all necessary arrangements; full development could follow within another two years, depending upon market demand for the uses planned.

A BRIEF LOOK AT TYPICAL IMPACT QUESTIONS RAISED IN THE REVIEW PROCESS

At least two major issues related to economics arise when reviewing the North Point Park/Marina development plan. The first issue might be termed the project's perceived and real impacts on the "business microclimate" of the vicinity: Fisherman's Wharf, The Cannery, Ghirardelli Square, the Cost Plus operation and all others in the area for whom the tourist dollar is most significant. The second issue, generally raised in somewhat more vague terms, is whether adding additional commercial recreation space on the North Waterfront is beneficial (in various terms) to San Franciscans, or other Bay Area residents.

These questions are of course intertwined with associated questions of fiscal, or financial impact; this analysis covers only the market-oriented or broad questions of site use. The first issue above appears to be the most frequently raised, and it will thus receive attention here first:

ELEMENTS AND LIMITS OF ECONOMIC IMPACT UPON THE NORTHERN WATERFRONT VICINITY

The principal question is what effect full operation of the North Point Park/Marina's facilities might have upon existing commercial operations in the vicinity. The availability of any current or historical data on existing operations is limited (due to financial disclosure limits). It is difficult to set what relationships between old and new uses might be in hard dollar (sales volumes and profits) terms. There are, nonetheless, certain points that can be examined, on a limited basis, using available information. The end result sought here is a preview of business conditions (assumed, in this instance) that might exist following introduction of the proposed project's new uses into the area.

Applicable Recent Experience of Major Northern Waterfront Businesses

It is useful to at least attempt to profile the business environment in the Northern Waterfront zone over some historical period. Most of the major restaurants in the Fisherman's Wharf vicinity are now holding percentage leases from the Port of San Francisco, and thus report to that agency in various terms their approximate gross revenues. This situation does not apply, of course, to the privately-held Cannery and Ghirardelli Square sites, so a few operators are not at all covered (at least six major restaurants at Ghirardelli and five at the Cannery). Respondents familiar with conditions in these two areas indicate that recent performance levels have been outstanding for some, and satisfactory for others. No evidence of any tangible sort exists to support claims. At the Wharf, however, the evidence is rather clear. Without the ability to utilize specifics, we can report that Port of San Francisco records for the years 1965-1975 show that major Wharf restaurant operators "as a group" experienced an increase in total sales of some 109 percent, or an average of nearly 11 percent annually. In no year did total volume for the "group" drop, although it flattened in the mid-sixties due to remodeling and repairs by various operators. In real terms (deflated dollars), these operators probably averaged five to six percent annually, an important achievement during a period of difficulty in the industry.

Significant events occurred during this period, including the opening of Ghirardelli Square in late 1964, opening of The Cannery in 1969, and expansion of Ghirardelli in 1969. Further, there were major new eating and drinking facility openings throughout the Bay Area, all presumably siphoning off a portion of the restaurant dollar. Throughout this entire period, only one Fisherman's Wharf operator (of the 14 involved) suffered any marked decline in sales volume, and it retired from operation. All others improved steadily and dramatically, even after adding Ghirardelli - Cannery attractions to the older, traditional Wharf area.

Specific retail data for this period is not readily available. Observers of the Wharf scene point out, however, that retailing outside Ghirardelli-Cannery-Cost Plus-Akron remains limited, although "recreation" (arcades, etc.) is commonly purveyed in the Wharf area. The only major visitor-oriented retailer in the older Wharf area is Cost Plus, historically a huge success, whose expansion seems to have fueled additional gains. Akron is not as happy a story, but their operation statewide seems to be in some difficulty; the reason may be diversity of goods, pricing policies, or other internal financial difficulties. Most other retail operations of consequence, as noted, are concentrated in the Ghirardelli and Cannery spaces, and include a series of apparel and specialty shops. There have been turnovers, but all space is quickly utilized.

A consulting firm presently under contract to the Port of San Francisco is working up a marina and ancillary facilities feasibility study for the Wharf-North Point project areas. In the process, the firm is examining in detail retailing in the area. Although only in the preliminary study phase, the consultants have already established a pattern for retailing comparable to that of Wharf area restaurants. In a word, it is strong, and has been growing constantly even as new competition has emerged.

These retailers mentioned above are by far the most prominent, but many others (including ship chandleries, automobile services, furnishings) do well in the overall zone. Two sources knowledgeable in Northern Waterfront retailing report problems for small shops, however, through late 1973 and well into 1974; apparently, 1975 has been somewhat of a turnaround, coupled to the steady visitation to San Francisco through this past spring and summer.

Validity of the "Clustering" Concept

Various parties dispute whether continuing to add new commercial facilities of this type normally benefits older operators, newcomers, both, or none at all. It should suffice here to examine the question only in the light of limited evidence related to similar circumstances: commercial recreation complexes, in waterfront settings. For instance, these areas of similar character all have evolved in an incremental fashion as new facilities joined those already in place:

- Seattle's Central Waterfront
- Los Angeles-Long Beach Harbor

- Santa Barbara's Waterfront
- Marina del Rey, Los Angeles
- San Diego's Mission Bay and Harbor Area
- Newport Harbor, Orange County
- Oakland's Jack London Square
- Berkeley-Emeryville Marinas, Alameda County

A check through all available information on reported sales of establishments in these areas clearly indicates that the sales trend in all but a few instances has been steadily upward. A 1973 study completed by Washington consultants for private interests found that Portland and Seattle area restaurants in waterfront locations outperformed other comparable facilities on a 1.5 to 1 sales ratio (these were actual revenue findings). A study completed by California consultants in 1974 for private clients found, using data on Los Angeles area restaurants, that "clustered" facilities (in Marina del Rey and on La Cienega's "Restaurant Row") outperformed "free-standing" facilities by some $400 to $1,000 per seat on average. Further, the study disclosed that the water-oriented Marina del Rey volumes substantially exceeded even the rather well-known and patronized Restaurant Row operations. There are, of course, reasons for viewing such aberrations with care, including the market area's age, household and income makeup, quality of the facilities' food, price, access considerations, the ambience of a given area, ability to park and depart easily, and so forth. Nonetheless, the case for clustered, self-enhancing complexes is strengthened by these and similar data.

The above-cited evidence (and corresponding fragments of proof from other reputable sources) shows that waterfront locations have proven of immeasurable value to restaurant operators over time, particularly when compared to their less fortunate competitors in non-water-oriented locations. Some of the recent volumes per seat in high activity areas, including Fisherman's Wharf, are extraordinary. Two or three times the average of their free-standing non-waterfront competitors is not uncommon.

Food and beverage industry consultants have, from time to time, reported similar findings on a national basis. The last report of this type readily available (1972) indicated that "suburban" operators were growing at a rate four to five times that of their central city comparables (but with lower base volumes). In all but a few instances, these non-central-city locations (outside Central Business Districts) were outperformed by waterfront and marina locations.

Port and marina officials and leasing managers, as well as operators, will readily admit to individual failures in activity centers, but usually condition the remark with observations related to that operator's lack of financing, acumen or product acceptance in the market. All sources generally refuse, on a casual inquiry, to produce actual statistics related to any operator's situations at various intervals. The records from past assignments show, however, that the average volume of waterfront, marina-oriented restaurants of a competitive nature is approaching in 1975 some $6,000 to $8,000 per seat. This figure produces one to two million dollars in sales for a 200 seat facility. The sales figure for many operations is distorted by banquet facility sales, unusual bar operations, and the like. Extraordinarily well-patronized establishments in high visitation areas may well exceed $10,000 effective volume per seat annually. Profitability, however, will continue to vary by type of operation and longevity.

Useable data on retailing in these locations is sparse, primarily due to its secondary position in the context of the food and drink sales. There are people in the business, however, who claim that specialty retailing in clustered situations does equally well, depending on location, quality, etc. In established cases, new operations have been added over time to an established, traditional area of activity. The pace of expansion has varied substantially: Marina del Rey in Los Angeles is a phenomenon unto itself, a very significant example of "instant market capture" of a given metropolitan area's leisure activities. Seattle's waterfront activity level has risen appreciably in the past five years, after years of quiet de-emphasis. San Diego Harbor has similar examples in Mission Bay and the Harbor Drive vicinity. Traditionally, Santa Barbara has not shown the inclination to support many new operations, although the relationship of downtown to wharfside in Santa Barbara is unique and misleading. In the Bay Area, Fisherman's Wharf in San Francisco is by far the major destination for visitors seeking the waterfront commercial experience; Sausalito holds second place; Oakland runs a very quiet third; and the new Emeryville and Berkeley Marinas trail. In each case also, the "clustering effect" has not impeded sales growth in the total volumes of the complex, but in many cases (according to respondents), it has been the primary determinant.

The considerable variety in performance levels from one restaurant, shop, or activity area to another calls for caution in the consideration of the apparent market overall, or the long-term potentials for operators at any given time. Yet, the evidence generally available supports a belief that in most instances the addition of new facilities to an activity area has dramatically increased overall sales, not reduced it in any way. What the final implications of indefinite clustering might be is unknown, and it cannot be measured. The variables of operator differences are too great to carry recent experience too far into the future, or to extrapolate indefinitely the past successes of key operators in highly desirable locations.

What will ultimately control the total sales volume pool for all Northern Waterfront businesses is a combination of (1) growth in the volume potential drawn from visitors to San Francisco, (2) the composition of Northern Waterfront business, in terms of differentiation, and (3) the profitability of each enterprise at any given time. A quick look at these determinants of visitor-oriented business expansion follows.

OUTLOOK FOR CONTINUED GROWTH IN TOURISM AND ITS SUPPORT FOR ADDITIONAL RETAILING ON THE WATERFRONT

Volumes have been written in recent years on the future of the visitor industry in San Francisco (with and without prodding from various special interest groups). Of these, the publications of the Visitors and Convention Bureau are generally bullish; technical publications have varied, but tend in the main to call for growth in the levels of visitation, but less dramatic growth in the local visitor-supported employment base. At least two studies generally available discuss in rather lengthy terms the parameters of visitor industry expansion under varying assumptions. Arthur D. Little Inc. studies of the waterfront for the Port of San Francisco provide substantial insights into the question. Related studies by ADL for the City and County Planning Department provide updated projections of growth for all local visitor-supported activities.

The ADL forecasts generally support a rising level of visitation to San Francisco, and to the Northern Waterfront as a high attraction zone.

Another report of interest completed by consultants Keyser-Marston (economics) and the Rockrise office (design) in 1973 focused upon the potentials for a "Tivoli Gardens" on the Embarcadero closer to the Financial District. This study explores in considerable detail the potentials for retailing and associated recreational uses in a project theoretically less "commercial" in nature than the Wharf uses. The interesting statistics in this study, although conditioned as usual, reflect a strong belief by a number of parties that visitor industry growth and the popularity of San Francisco's waterfront attractions will place inexorable development pressure on the shoreline.

These and related technical studies, though varied in approach and sponsorship, call for additional recreational facilities on the waterfront, with emphasis on serving the visitor. Until other evidence to the contrary is introduced, it is reasonable to assume that the presently strong level of market support for all appropriate uses will continue to attract investment in the area, and support competition between operators in a healthy fashion.

DIVERSIFICATION OF ACTIVITY AND ITS LIKELY IMPACT ON WATERFRONT BUSINESSES

One important determinant of overall business health in the area will continue to be the diversity of experiences available to the all-important visitor. In this regard, there is now ample evidence that in rapidly emerging centers of activity elsewhere, it is the very introduction of diverse activity that has kept a strong business profile in a soft overall economy. It is not at all difficult to call forth a number of examples of "coexistence" in waterfront activity centers where diverse uses and themes appear to have strengthened the overall economic climate. In examining some local situations, one finds that in Jack London Square the most recent restaurant additions have been the Elegant Farmer (popularly-priced traditional menu, rococo decor) and a beef-n-brew steakery with modest charges.

Similar examples of juxtaposition between seafood and other restaurant themes exist at the Emeryville Marina (Tia Maria/Trader Vic's) and the Berkeley Marina (Solomon Grundy's/His Lordship's/Marriott); and of course in Sausalito. In the Fisherman's Wharf area in San Francisco, many specialty restaurants in Ghirardelli Square and at The Cannery coexist happily with the major seafood outlets at the Wharf proper. Like situations have emerged along the entire coastal area from Mexico to Vancouver, B.C.

There are reasons for this diversity other than the whims of food facility decorators, of course. Rapid increases in the costs of raw seafood have placed fish houses at a disadvantage in recent years as other houses rode a more stable cost curve. Many operators have by necessity moved from a seafood-only fare to a combination with other items. These profitability considerations plus the saturation of many water-oriented restaurant zones with seafood motifs has led to a definite search by operators for new, catchy motifs and appealing menus with a broader capture potential.

In retailing, diversity is more a way of life, and absolutely required when an area places numerous impulse-item stores adjacent to one another. There is no other way to maintain the ebb and flow of patrons in such a volatile retailing environment. Thus one may find, in a typical visitor attraction zone a host of apparel shops, all purveying clothing, but each seeking to maintain a different "image" while supporting heavy traffic for the group as a whole.

These observations about diversity are simply made to illustrate the very probable desirability of introducing additional appropriate uses into the Northern Waterfront area: gains in one group of activities will balance losses in another, and entrepreneurs will react to changing conditions by adjusting their mix of goods and services. The ultimate outcome, measured in money terms, should be positive for the private parties and the community-at-large.

There are, of course, limits to the beneficial impacts of diversity and related marketing tools. The ability of various operations to earn a profit is also important to the viability of an area like the Northern Waterfront. A short discussion of this item is thus provided below:

OUTLOOK FOR RETAILING OPERATIONS SERVING THE VISITOR INDUSTRY ON THE NORTHERN WATERFRONT

Significant changes are occurring in retailing everywhere, and nowhere is the pace of adjustment more rapid than in areas where the tourist's dollar is critical. Due to a complex series of changes in the international and national economies, there has been a flattening out of retailing profits in recent years as inflationary forces have eroded real gains. The eating and drinking industry, so important to this discussion, has not fared well in the recent past, although the outlook is brightening now. The reasons for dining industry problems are rather clearcut: consumer tastes shifting and affecting volumes in restaurants by type and location; rising costs of materials and labor, causing a cost-push spiral of menu prices; a declining portion of family disposable income allocated to dining out; some disaffection with restaurant dining on the part of the young. Salvaging the situation for high-quality facilities has been an enormous increase in business entertainment; but in many areas quality restaurants not of international repute have had somewhat tough sailing as more efficient, profitable high-turnover houses have spread throughout urbanized regions. An example of this changing pattern is provided by contrasting one of Victoria Station's facilities with a high-priced, traditional steakery in a central business district.

There are food and drink consultants that believe that limited potential exists for additional restaurants operated on a family basis, or otherwise tailored to a changing pattern of service. This raises interesting questions about restaurants clustering in high activity zones: do they in fact still compete directly with one another? Evidence emerging appears to suggest that they do not; that customers relate to the ambience, the service and the prices, and split along personal taste lines. The available information related to food and drink sales in the existing Wharf area certainly indicates no lack of patronage on the part of traditional houses -- and this in the face of contentions by some that food and service quality has deteriorated there steadily since the late fifties.

It is probable that the existing Wharf restaurants will maintain a strong position in the area's activity no matter what competition is introduced in the future. Whether or not these facilities are able to increase sales to a satisfactory level over time may well be a function of their ability to hold the line on price increases and provide a minimum level of pleasant service to the visitor.

Retail shops will not be able to sustain continued growth in the face of indefinite proliferation of competitors. This is not likely to occur, however, at least at the viable end of the market. The present retail store picture, as reported on a hearsay basis, is reasonably good for most and excellent for some. There are visible retailing problems in the Wharf zone, but many of these are unpleasant, parasitic uses that have followed major improvements to the area. These operations will always be at risk, and should be. The remaining shops spread between Ghirardelli, The Cannery and the Wharf seem not especially vulnerable to the proposed addition of 42,000 feet of floor area to a North Point Park/Marina project. If vacancy levels were to sharply increase, and visitation to the Northern Waterfront area to decrease dramatically, there could be cause to question any proposed increases in the retailing inventory. This is not, apparently, at all the trend.

In all the cases above, there will be controlling levels of sales, capture rates and measures of profitability that can -- at great expense -- be quantified through additional forecasts. It is presumed from experience that these observations are nearly correct and would be borne out by fully funded research of this nature.

SOME BRIEF OBSERVATIONS ON A WIDER FRONT RELATED TO ECONOMIC IMPACT

The discussion above has stressed the relationships between additional commercial development in the Northern Waterfront zone and the older concentration. A case can be made for assuming that no significant negative impacts will fall upon existing uses simply due to operation of North Point Park/Marina facilities; in fact the opposite would be expected to occur, if all controlling variables stay in reasonable equilibrium. The analysis could be extended down to fine grain cases, to be sure; but this would absolutely require disclosure of financial information just not available to the public at large.

What, however, of the impacts of additional Northern Waterfront commercialization on the community-at-large (San Francisco, the Bay Area)? To properly judge the worth of additional development in this area geared to tourism, it must be recognized that: (1) employment in San Francisco and in the North Bay portion of the region continues to shift from manufacturing and heavier retail operations and construction -- to services, government, finance-insurance-real estate and related "light" categories; (2) losses continue in the retailing industry in general in San Francisco, and employment is still far from a satisfactory level for service workers; (3) Port operations in the Northern Waterfront zone are effectively ended, and intelligent reuse of the valuable shoreline is mandatory; (4) visitor activity not accommodated in new facilities will ultimately cause dislocation in the existing pattern of activity, as overcrowding and price difficulties drive away customers; (5) the combination of marina/sportfishing/commercial recreation activities is certainly the most natural use for the area, assuming sufficient care is devoted to maintaining public access to the water; (6) only in this location can major projects like the proposed North Point Park/Marina establish the proper mix of paying operations, thus projects not realized will not necessarily materialize elsewhere.

It would seem reasonable, then, to assume (without specific evidence to the contrary) that construction and operation of the proposed North Point project uses of a retailing nature will not upset the business situation already established. With proper promotion of all attractions, it is likely that significant improvement in business conditions might take place.

With respect to other uses proposed: the 60,000 SF of professional office space to be added is not a significant amount in the context of San Francisco's office market. It is not likely that the space will, even at full absorption, cause more than a ripple in Northern Waterfront space markets, and certainly less in the total commercial space market citywide. The parking proposed for the project is an item for additional discussion by developer and involved public agencies. Additional parking is necessary to give the North Point project enough locational status to compete effectively. How much, and under what ownership situation, is another matter outside this analysis.

The major public acreage to be improved along the Embarcadero can only be termed an asset to the project area and the community.

This discussion brings to light a few considerations involved in reviewing the proposed improvements. Definitive projections of the feasibility of all the enterprises in such a volatile environment are not possible, and suppositions are open to challenge. It is suggested that these views are reasonable, conditioned by exposure to similar situations elsewhere.

APPENDIX M

PROJECTED REVENUES TO THE CITY AND COUNTY OF SAN FRANCISCO GENERATED BY THE PROPOSED NORTH POINT PARK/MARINA

1. Sales Tax

The gross sales for the proposed project are estimated at $40 million per year. At a sales tax rate of 1 percent for the City and County, revenue to San Francisco is estimated at $400,000 annually. This figure would change each year based on alterations in sales volume, inflation, and tax rate.

2. Employees' Payroll Taxes

Employees' payroll taxes are 1.1 percent of the gross payroll (1975). Salaries for restaurant, retail, and managerial employees were obtained from the U.S. Department of Labor.[1]

The mean waitress/waiter wage in San Francisco as of July 1973 was $1.22 per hour, or $2,600 per year. For retail sales the mean salary was $142 per week as of September 1973, or $7,380 per year. A range of five managerial salaries was given by the Department of Labor. The third or middle figure was chosen, $2,090 monthly or $25,000 annually, for the category Director of Personnel. Although each business would have a mix of employees, the figures used were for the dominant employee group of those earning lower salaries in order to give a conservative final figure. The only exception was the management/maintenance category, where the higher-income position was used.

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[1] U.S. Department of Labor, Bureau of Labor Statistics, telephone conversation October 23, 1975.

Multiplying the annual incomes for each group by the estimated number of employees gives the payroll estimates shown in Table M-1.

TABLE M-1

Estimated Annual Payroll
of Total Project

Restaurant	$ 2,310,000
Retail	980,000
Management	630,000
Total	$ 3,920,000
Or Approximately	$ 3,900,000

Applying the 1.1 percent employees' payroll tax yields $43,100 per year for the project. The City would also receive employees' payroll taxes on the salaries of construction workers in the sum of $99,000.

3. Parking Tax

The 1,000-stall parking garage is expected to generate an annual gross income of $1,100,000 (about $1,100 annually per stall). Applying the 9.1 percent parking tax rate to the gross receipts, $99,600 would be generated annually for the City. Parking tax rates are 10 percent of net receipts, or are calculated as 9.1 percent of gross receipts.

4. Utilities Tax

Water. The estimated annual water bill for the completed project is $24,400. Five percent for utilities tax would yield $1,020 annually.

Gas. The estimated annual gas bill at present rates is $112,000 for the completed development. The utilities tax on this bill at 1975 rates would be $5,610. Pacific Gas and Electric Company estimates that through gradual increases, by the end of 1976 all bills will be 30 percent higher than at present. This would apply to North Point Park/Marina, yielding taxes of $7,290 for the completed development.

Electricity. The estimated electrical bill for the completed project is $189,000 annually. At 5 percent the utilities tax would be $9,460. These figures are based on existing billing rates and are probably lower than actual future rates, since the cost of electricity is expected to rise, given the fact that 60 percent of the electricity supplied to California depends on fossil fuels.[1]

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[1] California Energy Resources Conservation and Development Commission, Quarterly fuel and energy summary: second quarter 1975.

Utilities Tax	Completed Project
Water	$ 1,020
Gas	7,290
Electricity	9,460
Annual Total	$ 17,770

5. Personal Property Tax

Personal property tax revenues from the 250 private pleasure craft expected in the project marina are estimated at about $165,000 annually, based on an average value of $23,000 per boat. The fifty sport-fishing boats, with an average value of $90,000, are expected to generate personal property taxes of about $129,000 annually. The combined revenue to the City from both would be about $294,000 annually. To the extent that these boats were previously moored at other facilities in San Francisco, this projected revenue would be reduced.

6. Possessory Interest Tax

Because North Point Park/Marina would be developed on Port-owned property, it would be exempt from City property taxes. Possessory interest tax, however, is levied by the City in place of property taxes. The amount is derived from a complex set of regulations and depends on the duration and terms of the lease. The more the lease moves away from fee valuation, or a condition where a piece of property is owned free and clear by a private individual, the less the tax. Restrictions in the lease lower the amount paid. The tax rate is adjusted each year to respond to changes in assessed value of the properties involved.

Possessory interest tax on North Point Park/Marina for the project is estimated at $726,000 annually, based on a total for full cash value of property and improvements of about $25,300,000. This is assessed at 25 percent and taxed at 11.5 percent. This figure is a very rough estimate, indicating an approximate level rather than an exact amount. Refinement in figuring the amount, as well as adjustments based on annual shifts in the full cash value of the property, would influence the amount of possessory interest tax paid.

7. Port Rental Income

Revenues to the Port, as defined in the lease, are a combination of a fixed minimum rental plus 25 percent of any increased income over an established base year. For the completed project the minimum payment would be $370,000 annually, plus the above-mentioned 25 percent.